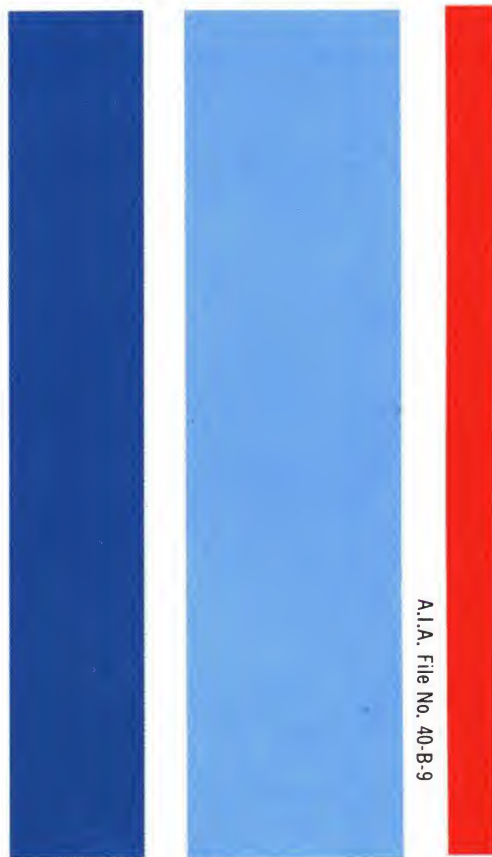


USG[®]

**PARTITIONS & WALLS
CEILING SYSTEMS
ROOF ASSEMBLIES
FIREPROOFING**

• construction selector

1967-1



A.I.A. File No. 40-B-9

UNITED STATES GYPSUM

contents—U.S.G. technical information

This 24-page Selector is the first element, and the key reference index, in the U.S.G. Architectural Technical Literature series. Following is the sequence of other folders comprising the complete series. Folders marked "S" appear in the consolidated U.S.G. section in Sweet's 1967 Architectural File, Sec. 12a. Those marked "O" appear elsewhere in Sweet's files. Copies of all folders listed are available through U.S.G. representatives.

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(O) Exp. Metals for Product Design.....	AV-94	(O) GRIP STRUT* Gratings.....	AV-97
(O) Exp. Metals for Architecture.....	AV-95	(O) GLOBE-STRUT* Channel Framing.....	AV-98
(O) GRATE-X* Gratings.....	AV-96	(O) CABLE STRUT* Tray Systems.....	AV-99

Numbering System: the System Folders and Product Catalogs are arranged in numerical sequence, as listed above. Those bearing a "7" as the last digit of the title number are new 1967 folders replacing any previous edition bearing the same first three digits. Folders with title numbers ending in "6" which have not been replaced were published in 1966 but are still current and unchanged. All Industrial Metal Catalogs are new 1967 editions.

this construction selector

summarizes the many effective systems of partitions, ceilings, roof assemblies, column and beam fireproofing, wall furring and exterior facings that can be constructed with United States Gypsum quality-tested building products. It is intended to serve as a general guide for the initial comparison and selection of the optimum systems for your project, and as an index to the specification folders providing full data on each system.

Organized for efficiency of use, complete technical information hereby is presented *according to the end result desired by the architect*. Functional criteria on all major USG construction systems are isolated for quick comparison. Data needed for take-off and specification are presented in separate folders for each system—all consolidated in a single, easy-to-use reference package.

how to use it

The Selector is divided into five sections—A to E—covering the system categories indicated at the right. Within each section are listed brief analyses of major variations of each system, as documented by fire or sound tests, federal specifications or ASTM designations. They are arranged sequentially according to fire ratings—the criterion that most often governs selection.

These analyses are organized to locate the criteria desired at a glance. In Sections A and B, covering partitions and ceilings, all information appears under eight column headings as follows:

fire rating	description	test no.	stc rating		relative cost index	comments	folder reference
			11-f	16-f			

In sections C, D and E—roof assemblies, fireproofing and exterior walls—certain of these columns are not applicable and are omitted. See pages 4 and 5 for explanations of data appearing in these columns—fire and sound ratings, relative costs, and abbreviations used.

The analyses applicable to each system, as listed here in all five sections of the Selector, are repeated in the individual folder covering that system, indicated by number in the “Folder Reference” column. Full information, details and specifications on the selected constructions also are available in the folders.

A sixth group of folders, listed here under Section F, consists of USG Product Catalogs, covering details of the U.S.G. components and accessories used in the systems, including general specifications.

Designers have realized full benefit from this literature by first studying the complete series of folders, then returning to the Selector for comparing system characteristics and locating specific information.

partitions—pages 6 to 13—are described in some 99 analyses of construction variations used in fire and sound tests, cross-referenced to 25 individual Systems Folders. Partition types include solid and laminated without studs, metal and wood-framed, and movable—in plaster and lath, drywall and gypsum tile.

ceilings—pages 14 to 19—are described with companion floor or roof construction, in 76 analyses of tested variations, and in ten individual Systems Folders. Included are suspended, furred and direct-attachment types, employing plaster and lath, drywall, and mineral fiber tile or panel surfaces. Air distribution and radiant heating systems also are offered.

roof assemblies—page 19—are covered in seven analyses of tested variations, and in two Systems Folders detailing poured gypsum decks, available with integral ceilings, and the prefabricated gypsum plank type.

structural fireproofing—page 20—presents the basic methods of protecting columns and beams, described in 21 tested variations and in four separate Systems Folders. Types covered are metal lath and plaster, gypsum lath and plaster, gypsum tile, and gypsum drywall.

exterior walls and furring—page 21—compares some 15 methods of furring exterior walls, with details shown in various folders throughout the series. Special “e” folders cover two drywall furring systems, exterior stucco construction, and expanded metal fascia walls.

product catalogs—listed and indexed on page 22—occupy a separate section of some 72 pages in ten folders presenting complete data on components and accessories used in U.S.G. construction systems. Subjects: gypsum plasters, plaster bases, gypsum wall-board, joint treatment, sheathing, insulating wool, paint products, sound control products, asphalt roofing, and mason’s lime.

Federal specification and ASTM designation qualifications of USG products are listed here on page 23.

a

b

c

d

e

f

fire and sound tests

interpreting data

Test data are used to compare, to select, and to specify materials and systems, and frequently to secure code or agency acceptance. Therefore, the data obtained cannot be compared or used without a full understanding of their source and meaning.

In comparing any two sets of test data, one must be certain they were obtained under circumstances and by test procedures that were identical or nearly identical. Particularly in the case of acoustical laboratories, test methods are subject to change. This can necessitate the use of a correction factor for tests conducted before or after a certain date.

Unfortunately, a whole fabric of myth has been built up within the building industry whereby certain numbers have become magic criteria. In too many laboratory tests, variations in components from normal production runs, in densities or conditions of materials as applied, and other variations have been undetected or incompletely reported. This has allowed some overzealous producers to use test reports in promoting systems which they know to be not representative of factual information or actual job results.

Don't believe or accept any numbers from any source until the entire test procedure is described and the testing agency is identified. If possible, insist upon using only such data as is provided by recognized agencies operating under ASTM or ASA procedures, and even then have the data interpreted and translated into meaningful information by competent experts.

Both fire and sound ratings are based on specific details of assembly which if not followed may directly affect the result. Caulking installed at the perimeter of partitions and along runner tracks, for example, is standard practice in all current sound testing. Any deviation in construction from that described in the test report, therefore, should be carefully considered in advance.

sound tests

The ASTM *Sound Transmission Class* (STC) is a method of rating partitions and floor-ceilings by comparing their airborne sound transmission loss test curve with a "Standard Contour" based upon known subjective response to known TL performance.

ASTM E90-61T airborne sound test procedure is being revised from a warble tone or random noise measured at half octave intervals (11 frequencies), to ASTM E90-66T with random noise measured at third octave intervals (16 frequencies).

A further revision involves the reporting of the Sound Transmission Class. Presently under E90-61T, an average deviation of one decibel is allowed from the contour curve between 125 cycles and 350 cycles, and 1400 cycles and 4000 cycles, with no deviations between 350 cycles and 1400 cycles. The STC is determined by the position of the contour curve at 4000 cycles. E90-66T procedure, however, allows an 8 db. deficiency at any point between 125 cycles and 4000 cycles, with a total deficiency not to exceed a 2 db. average. The STC is determined by the ordinate reading at the intersection of the contour curve at 500 cycles. In U.S.G. test analyses shown in this Selector and individual Systems Folders, the "11-f" column contains E90-61T data; the "16-f" heading indicates E90-66T data.

Generally, variations of only 1 or 2 db. have been found between STC ratings based on E90-61T and E90-66T. The exception may be partitions with strong coincident between 350 cycles and 1400 cycles.

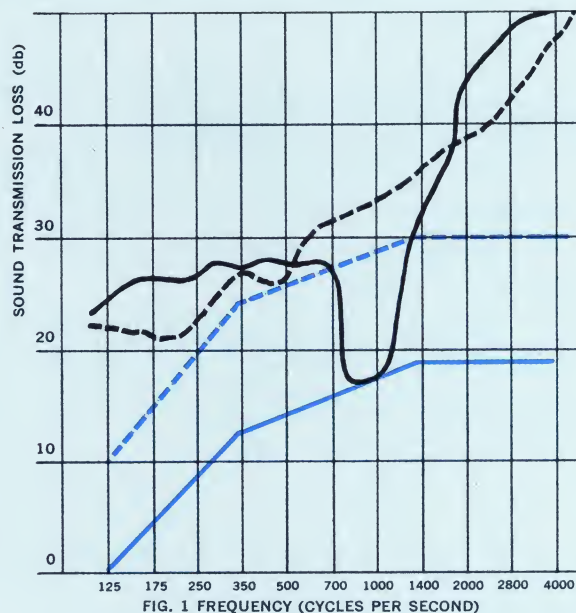


Figure 1 illustrates how the Sound Transmission Class is determined for 11 frequencies. A partition whose TL is represented by the solid line curve has an average of 30 db., but its STC is only 19. Speech can be heard through it easily. The partition represented by the dotted line also has a 30 db. average, but its STC is 30. While sound could be heard through this partition also, speech would be less intelligible.

The FHA Bulletin 750 *Impact Noise Rating* (INR) designates the ability of a floor-ceiling construction to resist impact sound transmission. INR is measured on a plus or minus scale in relation to the standard performance curve $INR=0$. The higher the positive number, the better the assembly resists impact sound transmission.

fire tests

A *Fire Resistance Rating* denotes the length of time a given partition or ceiling and floor or roof assembly can resist passage of intense heat and flames, while supporting the imposed design loads. Fire ratings are correlated with all components of a given assembly—not with the ceiling or partition membrane alone.

While architects are concerned that the materials or systems specified meet the building code requirements, the structure is not apt to receive a critical test to substantiate the fire-resistance performance of the material or system selected. The architect, however, usually is not in a position to question the validity of a test by a qualified laboratory accepted by the building commissioner.

Fireproofing, as well as certain other fire-rated constructions, should be selected by specification writers only after carefully reading the test report and comparing with the manufacturer's data. Field inspectors cannot be expected to detect discrepancies in application if all the steps are not spelled out in the specifications.

In addition to the assemblies documented by laboratory fire tests listed in this Selector, local code approvals have been obtained on other USG system variations. Information is available from U.S.G. representatives.

abbreviations

In the test analyses following, the abbreviation "est" in the Fire and Sound Rating columns indicates *estimated*; the abbreviation *N/A* indicates *not applicable* or *not available*. Other abbreviations are classified by columns where they appear:

Description and Comments			
acoust	acoustical	horiz	horizontally
adj	adjacent	htg	heating
alt	alternate	ins	insulating
alum	aluminum	install	installation
ann	annular	lamin	laminated
appl	applied	mach	machine
att	attached	max	maximum
atten	attenuation	met	metal
betw	between	min	mineral or minimum
bd	board	mov	movable
bikts	blankets	nom	nominal
bit	built	o.c.	on center
bvld	beveled	opp	opposite
cell	cellular	oz	ounce
cem	cement	partn	partition
chan	channel	pcs	pieces
clg	ceiling	perf	perforated
col	column	perim	perimeter
com	common	pl	plaster
compd	compound	plywd	plywood
conc	concrete	prot	protected or protection
constr	construction	qtr	quarter
corebd	coreboard	recom	recommended
corrug	corrugated	reinf	reinforcement
cov	covered	resil	resilient
cr	cold rolled	run	runner(s)
ctd	coated	sec	section
dbl	double	sep	separate
dead	deadening	separ	separated
dens	density	sf	self furring
diag	diagonal	sheathg	sheathing
dir	direct	slot	slotted
distr	distribution	sm	smooth
dm	diamond mesh	spec	special
ea	each	sq	square
elect	electrical	stag	staggered
excl	excluding	stl	steel
exp	exposed	susp	suspended
ext	exterior	syst	system
fab	fabric	surf	surface
fed spec	federal specifications	td	tied
fin	finish or finished	text	texture
fireprfg	fireproofing	thickn	thickness
fixt	fixture	treat	treatment
flr	floor	unexp	unexposed
formbd	formboard	unfin	unfinished
fur	furring	vert	vertically
ga	gauge	wallbd	wallboard
galv	galvanized	wd	wood
hex	hexagonal	wf	wide flange
hol	hollow	wt	weight (lbs./sq. ft.)

Plaster mixes are given by weight in lbs., aggregates by volume in cu. ft.

Test No.

incomb	incombustible	MLA	Metal Lath Association
Des	Design	NBFU	Natl. Bd. Fire Underwriters
GA	Gypsum Association	ASTM	Amer. Soc. Testing Materials
IBI	Insulation Board Institute	USG	United States Gypsum

The recognized laboratories which performed the tests are noted by abbreviation as follows:

Fire (f)	Sound (s)
BMS—National Bureau of Standards	NBS—National Bureau of Standards
UL—Underwriters' Laboratories, Inc.	TL—Riverbank Acoustical Laboratories
OSU—Ohio State University	G & H—Geiger & Hamme
FPRI—Fire Protection Research Institute	CK—Cedar Knolls Acoust. Laboratories
U of C—University of California	WEAL—Western Electro-Acoust. Lab.

Reports of tests listed here may be requested by number from United States Gypsum, Architect Service Dept., 101 S. Wacker Dr., Chicago, Ill. 60606.

Sound Rating

stc	sound transmission class	9-f avg	9-frequency average
11-f	11-frequency stc	INR	impact noise rating
16-f	16-frequency stc	db	decibel

relative cost data

The "Relative Cost Index" in the test analyses following is intended only as a tentative guide in the architect's preliminary investigations of construction assemblies.

Authoritative cost data on construction assemblies should be obtained by the architect in his own immediate market area. Costs inevitably vary, market by market, depending on the availability of materials, construction practices and the size and type structure under consideration.

Index figures used here are related only to systems within the same classification (i.e.: a partition system figure may be compared with the figure for other partition systems; it may not be compared with the Index figure for a ceiling, roof assembly or fireproofing system). Cost Index figures are to be compared only for assemblies vs. assemblies, ceiling materials vs. ceiling materials, beam fireproofing vs. beam fireproofing, column fireproofing vs. column fireproofing, etc. Costs of both labor and material are considered in the Index figures, based on minimum handling, cutting, etc.

There is no "base" construction on which Cost Index figures are based. They are projected on a relative basis from actual job costs in a typical metropolitan area.

selector guide sound-rated partitions

(See pages 7 to 13 for assemblies numbered as below)

STC range	drywall assemblies	plastered assemblies
55-60	10, 11, 18, 19	3, 94
50-54	12, 13, 20, 21, 22, 23, 26, 70, 82, 83, 84, 87	4, 5, 28, 31, 32, 38, 39, 57, 58, 60, 95, 96
45-49	14, 71, 72, 77, 78, 85, 86, 88, 89, 90, 97	6, 40, 41, 42, 43, 44, 45, 61
40-44	24, 73, 75, 79, 98, 99	1, 8, 46, 47, 48, 49, 50, 62, 63, 64, 65, 66, 67
35-39	27, 74, 80, 81, 91	51, 52, 53, 69

upgrading partition performance

PARTITIONS are rarely selected, detailed and specified by the architect with the opportunity to completely study and evaluate the requirements of the partition or the physical properties of the partition construction.

The functions of a partition may be defined as: (1) *Fire Protection*; (2) *Privacy (sound isolation)*; (3) *Integrity (A sound, adequate base for decoration)*. However, there is also a fourth consideration—*cost*—which will usually play a major part in the final selection.

fire protection—The requirement for fire protection is adequately defined by building codes. The selection of a partition meeting this requirement is easily resolved based on constructions or manufacturers' test data which are acceptable under the building code.

privacy (sound isolation)—Although there are no building code requirements for sound isolation, some standards have been set by FHA, private mortgage sources and other agencies. Privacy is a varying mixture of intangible conditions and few facts. Some of the intangible conditions which must be considered are: the occupancy use of adjoining spaces; the masking level of sound as provided by traffic, air distribution systems, etc.; the size, shape and acoustical absorption of adjacent rooms; flanking paths provided by floor systems, ceiling assemblies, curtain walls and common partitions; and the noise levels anticipated—television sets, hi-fi sets, kitchen equipment, etc. can all develop noise levels in excess of 100 decibels.

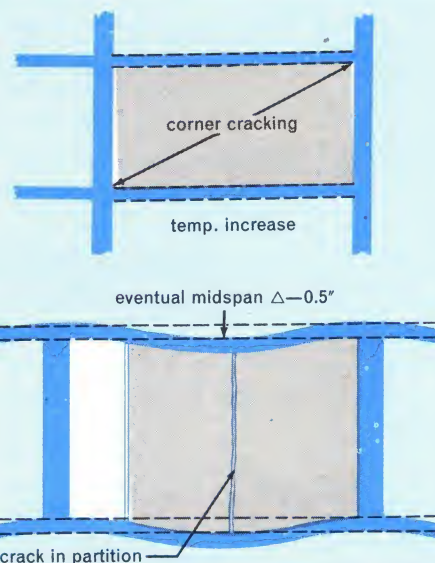
The Sound Transmission Class of a partition should be used as the initial basis of selection for further investigation. Laboratory results should be used as a basis of comparison, only. It is improbable that a partition constructed in the field will achieve the performance of a panel built in the laboratory, for several reasons:

- (1) Workmanship (attention to details).
- (2) Size (partitions vary in height and length, while panels tested in a laboratory are uniform in size).
- (3) Edge restraint.
- (4) Integrity (the laboratory panel will have no openings or leaks such as electrical outlets, voids, etc.).
- (5) Flanking paths.

Where sound isolation is critical to the proper functioning of the structure, it is usually advisable that an acoustical consultant be retained.

structural integrity—While most partitions are classified as non-load bearing, it is generally accepted that these partitions are stressed by internal and external loads. When these accumulated stresses exceed the strength of the partition, the stresses are relieved by cracking. The structural integrity of a partition can be maintained and the decorative surfaces remain unblemished if movement within the structure and stresses within the partition are understood and accepted, and provisions are made to compensate for the loads.

Internal Stresses within a partition are the result of expansion and contraction of the components, related to temperature and moisture content. Temperature variations are common during the construction period; moisture varies seasonally with humidity conditions. Laboratory data provides a basis of evaluating the extent of movement expected with specific products:



Diagrams illustrate two primary causes of partition cracking. Racking of structural frame (above) may cause failure in upper floors of high-rise buildings where exterior columns are exposed. Deflection of flat-plate floor slab (below) is believed to create flexural tension and resultant cracking, usually near center of partition span.

Thermal Coefficient of Expansion (unrestrained) [Inches/Inch/°F. (40°—100°F.)]

Sanded Gypsum Plaster (100:2, 100:3)....	7.0x10 ⁻⁶
Wood Fiber Plaster (sanded 100:1).....	8.0x10 ⁻⁶
Gypsum Lath.....	8.8x10 ⁻⁶
Gypsum Wallboard.....	8.3x10 ⁻⁶

Hygrometric Coefficient of Expansion (unrestrained) [Inches/Inch/% R.H. (5%—90% R.H.)]

Gypsum Lath or Wallboard.....	4.8x10 ⁻⁶
Sanded Gypsum Plaster (100:2, 100:3)....	1.5x10 ⁻⁶
STRUCO-LITE* Plaster (regular).....	4.8x10 ⁻⁶
Vermiculite Gypsum Plaster (100:2).....	3.8x10 ⁻⁶
Wood Fiber Plaster (sanded 100:1).....	2.8x10 ⁻⁶

Structural Movement stressing partitions breaks down into four basic general areas:

- (1) *Wind loads* cause partitions anchored to structural framing members to react as shear walls.
- (2) *Temperature loads* cause exposed columns and shear walls to expand and contract seasonally. On high-rise structures the accumulation of this movement results in deflection of the upper floors, causing the partition to be loaded as it moves from a simple rectangle to a parallelogram.
- (3) *Deflection* of floor slabs, particularly "creep deflection", places the partition in flexural tension as the floor deflects and the partition is loaded by deflection from the slab or structure above.
- (4) *Creep* in concrete columns.

All of these factors emphasize the importance of selecting a partition with superior structural characteristics. The layout of partitions is important in that relief from stresses can be accomplished by not tying the partitions into the structure, particularly at columns and ceilings.

Obviously, the ideal solution is to eliminate all stresses through control joints. Systems Folders in this USG literature series show applicable control joints for use at the periphery of the partition, and in long runs of partitions at spacings not to exceed 30' o.c.



fire rating	description	test no.	stc rating		relative cost index	comments	folder reference
			11-f	16-f			

4-hour rated partitions

PLASTERED ASSEMBLIES

MASONRY TYPE

4 hrs.	Gypsum Tile & Plaster—4" hol PYROBAR tile— $\frac{3}{4}$ " 100:3 gypsum sand plaster wt 26 width $5\frac{1}{4}$ "	T-118-OSU (f) NBS-305 (s)	42		159	Excellent fire protection—good plaster base	a-1167	1
4 hrs.	Gypsum Tile & Plaster—6" hol PYROBAR tile— $\frac{3}{4}$ " 100:3 gypsum sand plaster one side only wt 28 width $6\frac{1}{4}$ "	T-26-1-OSU (f)	N/A		139	Excellent fire protection, low dead load	a-1167	2

3-hour rated partitions

PLASTERED ASSEMBLIES

MASONRY TYPE

3 hrs. est	Gypsum Tile & Plaster—3" hol PYROBAR—2x2 wd fur 16" o.c. vert— $1\frac{1}{2}$ " THERMAFIBER sound atten bkts betw fur—R-5 resil clips att to wd fur— $\frac{3}{4}$ " ROCKLATH pl base— $\frac{1}{2}$ " gypsum sand plaster one side & opp side $\frac{3}{4}$ " direct—perimeter caulked wt 22.5 width $6\frac{1}{2}$ "	USG-123-FT-G&H (s) Field Test KSO-1090072-f (s)	55 52		202	Excellent sound & fire resistance. No outlets in 123-FT test; two caulked outlets in field test	a-1156	3
3 hrs. est	Gypsum Tile & Plaster—4" hol PYROBAR—R-5 resil clips— $\frac{3}{4}$ " ROCKLATH pl base— $\frac{1}{2}$ " gypsum sand plaster one side & opp side $\frac{3}{4}$ " direct—perimeter caulked wt 27 width 6"	USG-110-FT-G&H (s) Field Test KSO-1090072-e (s)	50 47		178	Good attenuation. No outlets in 110-FT; two caulked outlets in field test	a-1156	4
3 hrs. est	Gypsum Tile & Plaster—3" hol PYROBAR—R-5 resil clips— $\frac{3}{4}$ " ROCKLATH pl base— $\frac{1}{2}$ " gypsum sand plaster one side & opp side $\frac{3}{4}$ " direct wt 24 width $4\frac{3}{4}$ "	TL-60-127 (s)	52		178	Excellent fire resistance—reduces sound leaks & flanking paths	a-1156	5
3 hrs. est	Gypsum Tile & Plaster—3" hol PYROBAR—#500 resil clips— $\frac{3}{4}$ " cr chan & 3.4# dm met lath— $\frac{3}{4}$ " gypsum sand plaster one side & opp side $\frac{3}{4}$ " direct wt 27 width $5\frac{1}{4}$ "	NBS-313 (s)	46		195		a-1156	6
3 hrs.	Gypsum Tile & Plaster—4" hol PYROBAR tile— $\frac{3}{4}$ " 100:3 gypsum sand plaster one side only wt 20 width $4\frac{1}{2}$ "	T-118-29&30-OSU (f)	N/A		124		a-1167	7
3 hrs.	Gypsum Tile & Plaster—3" hol PYROBAR— $\frac{3}{4}$ " 100:3 gypsum sand plaster wt 23 width $4\frac{1}{4}$ "	T-26-5-OSU (f) NBS-304 (s)		40	154	Incombustible—good plaster base—economical	a-1167	8
3 hrs.	Gypsum Tile—3" solid PYROBAR—unplastered wt 16 width 3"	T-26-3-OSU (f)			91	Excellent fire protection for weight & cost	a-1167	9

2-hour rated partitions

DRYWALL ASSEMBLIES

LAMINATED & SOLID TYPES

2 hrs.	Double Solid Drywall— $\frac{1}{2}$ " SHEETROCK gypsum wallbd lamin ea face to two rows of 1" USG gypsum corebd spaced 3" apart— $1\frac{1}{2}$ " THERMAFIBER sound atten bkts stapled to back of one row—stl runners—joints fin—perimeter caulked wt 13 width 6"	UL Des 26-2 hr (f) USG-96-FT-G&H (s) Field Test KSO-109006-c (s)	60 56	55	165	Fire rating also applies without wool. Outstanding sound isolation at low cost	a-1077	10
2 hrs. est	Triple Solid Drywall— $\frac{1}{2}$ " SHEETROCK gypsum wallbd—3 rows of 1" USG gypsum corebd ea spaced min $1\frac{1}{4}$ " & $1\frac{1}{2}$ " apart— $1\frac{1}{2}$ " THERMAFIBER sound atten bkts att to back of one outer row—wallbd lamin & screw att to outer rows—joints fin—perimeter caulked wt 17 width $6\frac{1}{4}$ "	USG-94-FT-G&H (s)	59		210	Septum improves resistance against sound leaks on job	a-1077	11
2 hrs. est	Triple Solid Drywall— $\frac{1}{2}$ " SHEETROCK gypsum wallbd—3 rows of 1" USG gypsum corebd ea spaced $1\frac{1}{4}$ " apart—wallbd lamin & screw att to outer rows—joints fin—perimeter caulked wt 18 width $6\frac{1}{4}$ "	USG-95-FT-G&H (s)	53		195	Among best lamin drywall party walls in 50-54 stc range	a-1077	12
2 hrs.	418 Gypsum Ribwall—2 layers $\frac{3}{4}$ " SHEETROCK FIRECODE gypsum wallbd ea side—1"x6" gypsum ribs 24" o.c. lamin betw base layers—wallbd screw att—joints fin wt 12 width $4\frac{1}{4}$ "	UL Des 17-2 hr (f) TL-63-15 (s)	51		165	Has design flexibility for pipe chase or party walls	a-1067	13



fire rating	description	test no.	stc rating		relative cost index	comments	folder reference
			11-f	16-f			
14 2 hrs.	Double Solid Drywall— $\frac{1}{2}$ " SHEETROCK gypsum wallbd—two rows of 1" USG gypsum corebd spaced $\frac{1}{4}$ " apart—wallbd lamin & screw att ea face—joints fin—perimeter caulked wt 13 width 4 $\frac{1}{2}$ "	T-1310-OSU (f) USG-13-FT-G&H (s)		46	150	Excellent, versatile—best value in 45-49 stc range	a-1077
15 2 hrs.	Solid Drywall— $\frac{1}{2}$ " SHEETROCK FIRECODE "C" gypsum wallbd faces ea side over 1" USG gypsum corebd—face layers lamin—joints stag & fin—USG #218 track at flr— $\frac{1}{2}$ " met trim at sidewall/clg wt 8 width 2"	T-1339-OSU (f)	N/A		120		a-1047
16 2 hrs. est	Solid Drywall— $\frac{5}{8}$ " SHEETROCK FIRECODE gypsum wallbd faces ea side over 1" USG gypsum corebd—face layers lamin—joints stag & fin wt 9 width 2 $\frac{1}{4}$ "	TL-59-98 (s)	34		124		a-1047
17 2 hrs.	Solid Drywall Vent Shaft— $\frac{5}{8}$ " SHEETROCK FIRECODE gypsum wallbd faces ea side over 1" USG gypsum corebd—face layers lamin & screw att—joints stag & unfin— $\frac{1}{8}$ "x1 $\frac{1}{2}$ " angle runners horiz at flr clg & qtr points wt 9.4 width 2 $\frac{1}{4}$ "	UL Des 21-2 hr (f)	N/A		124		a-1047

METAL FRAMED TYPE

18 2 hrs. est	Met Stud—2 layers $\frac{5}{8}$ " SHEETROCK FIRECODE "C" gypsum wallbd ea side—3 $\frac{1}{2}$ " USG studs 24" o.c.—base layer screw att—face layer lamin— $\frac{1}{2}$ " THERMAFIBER sound atten blkts—joints fin—perimeter caulked wt 12 width 6 $\frac{1}{2}$ "	USG-109-FT-G&H (s) Field Test KSO-109006-a (s)	53 55		176	Highest stc value of metal stud drywall party walls tested	a-1207
19 2 hrs. est	Met Stud Chase Wall—2 layers $\frac{1}{2}$ " SHEETROCK FIRECODE "C" gypsum wallbd ea side—1 $\frac{1}{2}$ " USG studs 24" o.c. in 2 rows spaced 6 $\frac{1}{4}$ " apart— $\frac{1}{2}$ " wallbd gussets spanning chase att to studs at qtr points—wallbd appl vert & screw att— $\frac{1}{2}$ " THERMAFIBER sound atten blkts one side—joints stag & fin—perimeter caulked wt 11 width 12"	USG-134-FT-G&H (s)	55		189		a-1207
20 2 hrs. est	Met Stud—2 layers $\frac{1}{2}$ " SHEETROCK FIRECODE "C" gypsum wallbd ea side—2 $\frac{1}{2}$ " USG studs 24" o.c.—1 $\frac{1}{2}$ " THERMAFIBER sound atten blkts stapled—wallbd appl vert & joints stag—base layer screw att—face layer strip lamin & Type G screws centered betw studs—joints fin—perimeter caulked wt 10 width 4 $\frac{1}{2}$ "	USG-114-FT-G&H (s)	54		173	Best value of drywall metal stud party walls in 50-54 stc range	a-1207
21 2 hrs. est	Met Stud— $\frac{3}{4}$ " SHEETROCK FIRECODE gypsum wallbd—3 $\frac{1}{2}$ " USG studs 24" o.c.—2 layer—base layer $\frac{1}{2}$ " USG min fiber sound dead bd ea side screw att—wallbd face layer lamin & screw att—joints stag & fin—perimeter caulked wt 8 width 5 $\frac{1}{4}$ "	USG-103-FT-G&H (s) Field Test KSO-109006-b (s)	52 50		186		a-1207
22 2 hrs. est	Met Stud—2 layers $\frac{5}{8}$ " SHEETROCK FIRECODE gypsum wallbd—3 $\frac{1}{2}$ " USG studs 24" o.c.—3" THERMAFIBER ins wool blkts—2 layers wallbd lamin one side—opp side 2 layers wallbd separ by RC-1 chan spaced horiz 24" o.c. screw att—face joints fin wt 12 width 6 $\frac{1}{2}$ "	TL-62-212 (s)	51		187		a-1207
23 2 hrs. est	Met Stud—2 layers $\frac{5}{8}$ " SHEETROCK FIRECODE gypsum wallbd—3 $\frac{1}{2}$ " USG studs 24" o.c.—2 layers wallbd screw att one side—opp side 2 layers wallbd separ by RC-1 chan spaced horiz 24" o.c. screw att—face joints fin wt 12 width 6 $\frac{1}{2}$ "	TL-62-180 (s)	50		173		a-1207
24 2 hrs.	Met Stud—2 layers $\frac{5}{8}$ " SHEETROCK FIRECODE gypsum wallbd plain or vinyl faced ea side—3 $\frac{1}{2}$ " USG studs 24" o.c.—base layer screw att—face layer lamin or screw att—joints fin or unfin—perim caulked wt 12 width 6 $\frac{1}{2}$ "	UL Des 11-2 hr (f) TL-60-113 (s)		43	157	Excellent for corridors	a-1207
25 2 hrs.	Met Stud—2 layers $\frac{1}{2}$ " SHEETROCK FIRECODE "C" gypsum wallbd—1 $\frac{1}{2}$ " USG studs 24" o.c.—2 layers ea side vert appl & screw att joints fin wt 9 width 3 $\frac{1}{2}$ "	U of C 6-15-65 (f)	N/A		156	Most economical 2-hour metal stud drywall partition	a-1207

MOVABLE TYPE

26 2 hrs.	Mov VAUGHAN WALLS pre-chased dbl sound wall—spec $\frac{5}{8}$ " USG gypsum wallbd face panels lamin to $\frac{5}{8}$ " gypsum core strips placed to form panel joints—2 rows 1 $\frac{1}{2}$ " thick spaced 1 $\frac{1}{2}$ " or 3" apart—alum trim wt 13 width 5 $\frac{1}{4}$ " or 6"	UL Des 24-2 hr (f) TL-65-72 (s) TL-64-189 (s)		50 45	250 210	Ideal for library, conference rooms. 50 stc based on 6" wid. with wool; 45 stc on 5 $\frac{1}{4}$ " wid. without wool	a-1297
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WOOD FRAMED TYPE

27 2 hrs.	Wd Stud—2 layers $\frac{5}{8}$ " SHEETROCK FIRECODE or W/R FIRECODE "C" gypsum wallbd—2x4 16" o.c.—base layer 6d nails 6" o.c.—face layer lamin to base—joints fin	UL Des 4-2 hr (f) TL-57-14 (s)		38	161	Basic 2-hour partition constr.	a-1397
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fire rating	description	test no.	stc rating		relative cost index	comments	folder reference
			11-f	16-f			

PLASTERED ASSEMBLIES

SOLID TYPE

2 hrs. est	Double Solid Gypsum— $\frac{1}{2}$ " IMPERIAL plaster base & thin coat plaster—pl base strip lamin & att with Type G screws to 1" USG gypsum corebd—met angle runners at flr & clg 3" apart—2" THERMAFIBER sound atten blkts stapled to corebd one side— $\frac{1}{16}$ " IMPERIAL plaster—joints taped—perimeter caulked wt 13 width 6 $\frac{1}{8}$ "	Field Test KSO-1090072-d (s)	54	54	178		a-1147	28
2 hrs. est	Solid Gypsum— $\frac{5}{8}$ " IMPERIAL plaster base & thin coat plaster—pl base lamin ea face to 1" USG gypsum corebd—met angle runners at flr & clg—joints stag & taped— $\frac{1}{16}$ " IMPERIAL plaster wt 10 width 2 $\frac{1}{2}$ "	TL-63-208 (s)	34		135		a-1147	29
2 hrs.	Chan Stud—Solid Metal Lath & Plaster— $\frac{3}{4}$ " cr chan 16" o.c.—3.4# dm met lath—STRUCTO-LITE (Type R) plaster wt 12 width 2 $\frac{1}{2}$ "	UL Des 19-2 hr (f)	N/A		137	2-hr. rating also obtainable with 2" of wood fiber plaster	a-1027	30

METAL FRAMED TYPE

2 hrs.	Met Stud—2 layers $\frac{5}{8}$ " IMPERIAL plaster base Type X & thin coat plaster— $\frac{3}{8}$ " USG met studs 24" o.c.—base layer screw att—face layer lamin—joints taped— $\frac{1}{16}$ " IMPERIAL plaster wt 12 width 6 $\frac{1}{8}$ "	UL Des 11-2 hr (f) TL-63-177 (s)	50		174	Excellent for corridors; sound performance based on perimeter caulking	a-1147	31
2 hrs.	Met Stud—2 layers $\frac{1}{2}$ " IMPERIAL plaster base & thin coat plaster— $\frac{1}{2}$ " USG met studs 24" o.c.—run track gasketed & caulked—base layer screw att—face layer strip lamin 24" o.c. & att with Type G screws betw studs—2" THERMAFIBER sound atten blkts att one side— $\frac{1}{16}$ " IMPERIAL plaster—perimeter caulked wt 10 width 4 $\frac{5}{8}$ "	UL Des 27-2 hr (f) CK 654-66 (s) USG-127-FT-G&H (s) Field Test KSO-1090072-a (s)	52 48	53 49	183	CK 654-66 based on 2 layers Type X base screw-attached and 1" THERMAFIBER blankets; fire test same construction without wool	a-1147	32
2 hrs.	Stl Stud—Metal Lath & Plaster—2 $\frac{1}{2}$ " TRUSSTEEL studs 16" o.c.—3.4# dm met lath— $\frac{3}{4}$ " gypsum wood fiber plaster wt 17 width 4 $\frac{1}{4}$ "	BMS-92 table 31 (f)	N/A		210	Excellent fire performance; highly abrasion resistant	a-1177	33
2 hrs.	Stl Stud—Gypsum Lath & Plaster—2 $\frac{1}{2}$ " TRUSSTEEL studs 16" o.c.— $\frac{3}{8}$ " perf ROCKLATH— $\frac{3}{4}$ " 100:2-100:2 gypsum perlite plaster wt 11 width 5"	T-1813-GA-OSU (f)	N/A		132	Excellent fire rating at a low cost	a-1187	34

MASONRY TYPE

2 hrs.	Gypsum Tile & Plaster—3" hol PYROBAR— $\frac{3}{4}$ " 100:3 gypsum sand plaster one side only wt 17 width 3 $\frac{1}{2}$ "	GA-T-1101-OSU (f)			118	Good protection for chase walls, vent & elevator shafts	a-1167	35
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WOOD FRAMED TYPE

2 hrs.	Wd Stud—Gypsum Lath & Plaster—2x4 16" o.c.— $\frac{3}{8}$ " perf ROCKLATH nailed 5" o.c.—hex wire mesh nailed 8" o.c. over face of lath & held $\frac{1}{16}$ " away from face—1" 100:2 $\frac{1}{2}$ gypsum perlite plaster wt 12 width 6 $\frac{1}{8}$ "	T-961-OSU (f)	N/A		195		a-1366	36
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1½-hour rated partitions

DRYWALL ASSEMBLIES

SOLID TYPE

1½ hrs.	Solid Drywall— $\frac{1}{2}$ " SHEETROCK gypsum wallbd faces ea side over 1" USG gypsum corebd—face layers lamin—joints stag & fin—1" sq wd runner ea side wt 8 width 2"	T-1175-OSU (f)	N/A		105		a-1047	37
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1-hour rated partitions

PLASTERED ASSEMBLIES

METAL FRAMED TYPE

1 hr. est	Met Stud— $\frac{1}{2}$ " IMPERIAL plaster base Type X & thin coat plaster— $\frac{3}{8}$ " USG met studs 24" o.c.—2 layers pl base one side & single layer opp side both appl vert & screw att—1" THERMAFIBER sound atten blkts stapled to single layer—joints stag & taped— $\frac{1}{16}$ " IMPERIAL plaster—perimeter caulked wt 8 width 5 $\frac{1}{4}$ "	CK-664-2 (s)	51		159		a-1147	38
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fire rating	description	test no.	stc rating		relative cost index	comments	folder reference
			11-f	16-f			
39	1 hr. est Stl Stud—Resil Gypsum Lath & Plaster—3¼" TRUSSTEEL studs 16" o.c.—2" THERMAFIBER sound atten bkts—TR-1 clips one side & TL-1 clips opp side—¾" ROCKLATH—½" 100:2-100:2 gypsum sand plaster—perimeter caulked wt 14 width 5½"	USG-125-FT-G&H (s) CK-664-38 (s) GA-2-3-4-FT-G&H (s) Field Test KSO-1090072-b (s)	49 50 47	50 46	150	Est. fire rating based on perf. ROCKLATH. CK-664-38 based on 1" bkts. 2 caulked outlets on ea. side in field test	a-1187
40	1 hr. Stl Stud—Resil Gypsum Lath & Plaster—2½" TRUSSTEEL studs 16" o.c.—TR-1 clips—¾" perf ROCKLATH—½" 100:2 gypsum sand plaster—perimeter caulked wt 13 width 4½"	UL Des 24-1 hr (f) Field Test KSO-1090071-b (s)	48		138	Sound test with 6 caulked outlets on 2 sides of assembly	a-1187
41	1 hr. est Met Stud—Gypsum Lath & Plaster—2½" USG studs 16" o.c.—¾" ROCKLATH—MS-1 clips both sides—1" THERMAFIBER sound atten bkts—½" 100:2½ gypsum sand plaster—perimeter caulked wt 15 width 4¼"	CK-664-18 (s)		48	138		a-1197
42	1 hr. Stl Stud—Resil Metal Lath & Plaster—3¼" TRUSSTEEL studs—#400 resil clips—¼" pencil rods—3.4# dm met lath—¾" 100:2-100:3 gypsum sand plaster—perimeter caulked wt 19 width 5¾"	T-1263-OSU (f) CK 664-5 (s)		48	180	Popular construction with good sound isolation. Fire test based on assembly with 1½" studs	a-1177
43	1 hr. Stl Stud—Resil Gypsum Lath & Plaster—1½" TRUSSTEEL studs 16" o.c.—TR-1 clips—¾" perf ROCKLATH—½" 100:2-100:2 gypsum sand plaster wt 13 width 4½"	T-1559-OSU (f) USG-20-FT-G&H (s)	47		131	Can improve performance with sound attenuation wool	a-1187
44	1 hr. Met Stud—1 layer ½" IMPERIAL plaster base Type X & thin coat plaster—¾" USG met studs 24" o.c.—pl base screw att—1" THERMAFIBER sound atten bkts stapled one side—joints stag & taped—½" IMPERIAL plaster—perimeter caulked wt 8 width 4¾"	T-3124-OSU (f) CK-664-1 (s)		45	134	Fire test based on assembly with 2½" studs, without wool. Stud spacing at 16" o.c. recommended	a-1147
45	1 hr. Stl Stud—Resil Metal Lath & Plaster—1½" TRUSSTEEL studs—one side ¼" pencil rods & #400 resil clips—opp side direct—3.4# dm met lath—¾" 100:2-100:3 gypsum sand plaster wt 18 width 3¾"	T-1263-OSU (f) TL-58-8 (s)	45		159	Space-saving partition	a-1177
46	1 hr. est Met Stud—Gypsum Lath & Plaster—2½" USG studs 16" o.c.—¾" ROCKLATH—MS-1 clips both sides—½" 100:2½ gypsum sand plaster—perimeter caulked wt 14 width 4¼"	CK-664-17 (s)		42	125		a-1197
47	1 hr. est Stl Stud—Resil Gypsum Lath & Plaster—2½" TRUSSTEEL studs 16" o.c.—TR-1 clips one side & TL-1 clips opp side—¾" ROCKLATH FIRECODE—½" 100:2 gypsum sand plaster—perimeter caulked wt 12 width 5¾"	CK-664-6 (s)		42	128	Can improve STC with THERMAFIBER sound blankets stapled to back of direct-applied side per 125-ft test	a-1187
48	1 hr. Stl Stud—Gypsum Lath & Plaster—2½" TRUSSTEEL studs 16" o.c.—¾" perf ROCKLATH—½" 100:2-100:2 gypsum sand plaster wt 13 width 4½"	T-309-OSU (f) TL-58-7 (s)	41		125	Record of proven performance	a-1187
49	1 hr. Stl Stud—Gypsum Lath & Plaster—1½" TRUSSTEEL studs 16" o.c.—¾" perf ROCKLATH—½" 100:2-100:2 gypsum sand plaster wt 13 width 3¾"	T-887-OSU (f) TL-58-7 (s)	41		123	Good alternate for most solid partitions	a-1187
50	1 hr. Stl Stud—Metal Lath & Plaster—3¼" TRUSSTEEL studs 16" o.c.—3.4# dm met lath—¾" 100:2-100:2 gypsum sand plaster wt 16 width 4¾"	BMS-92 table 31 (f) NBS-229 F48 (s)	41		150	Standard steel stud partition	a-1177
51	1 hr. Met Stud—Gypsum Lath & Plaster—2½" USG studs 24" o.c.—2" THERMAFIBER ins wool bkts—¾" perf ROCKLATH screw att—½" gypsum sand plaster wt 13 width 4¼"	T-1974-OSU (f) TL-63-268 (s)	38		141		a-1197

SOLID TYPE

52	1 hr. Studless—Metal Lath & Plaster—solid—¾" riblath—100:2-100:2 gypsum sand plaster wt 18 width 2"	T-162-OSU (f) NBS-527-F51 (s)	38		127	Good performance—adaptable in areas of large volume constr.	a-1017
53	1 hr. Chan Stud—Solid Metal Lath & Plaster—¾" cr chan 16" o.c.—2.5# dm met lath—100:2-100:2 gypsum sand plaster wt 18 width 2"	MLA T-129 OSU (f) NBS-523 F45 (s)	37		133	Standard solid partition design	a-1027
54	1 hr. Studless—Solid Gypsum Lath & Plaster—½" long length ROCKLATH—¾" 100:1-100:2 gypsum sand plaster wt 16 width 2"	T-118-OSU (f) NBS-510 F29 (s)	34		120	Economical on volume projects where special fitting or cutting is minimum	a-1036

MASONRY TYPE

55	1 hr. Gypsum Tile—3" hol PYROBAR—unplastered wt 11 width 3"	BMS-92 table 24 (f)			78		a-1167
56	1 hr. Gypsum Tile—2" solid PYROBAR—unplastered wt 11 width 2"	BMS-92 table 24 (f)			86	For col. fireprfg., short runs & vent shafts only	a-1167



fire rating	description	test no.	stc rating		relative cost index	comments	folder reference
			11-f	16-f			
WOOD FRAMED TYPE							
1 hr. est	Wd Stud—Resil 5/8" IMPERIAL plaster base & thin coat plaster—2x4 16" o.c.—2 layers pl base one side screw att & lamin—single layer opp side screw att to RC-1 chan spaced 24" o.c.—3" THERMAFIBER ins wool blkts —1/16" IMPERIAL plaster both sides—perimeter caulked wt 11 width 6 1/8"	CK-654-38 (s)		53	160		a-1337
1 hr. est	Wd Stud—Resil 5/8" IMPERIAL plaster base & thin coat plaster—2x4 16" o.c.—3" THERMAFIBER ins wool blkts —RC-1 chan one side spaced 24" o.c.—base att with 1" Type S screws—opp side att direct with 1 1/2" Type W screws—1/16" IMPERIAL plaster both sides—perimeter caulked wt 8 width 5 1/2"	CK-664-4 (s) USG-111-FT-G&H (s)		49 50	142	Good sound isolation combined with highly abrasion-resistant surface. CK-664-4 based on 1/2" plaster base	a-1337
1 hr.	Wd Stud—1/2" IMPERIAL plaster base Type X att direct & thin coat plaster—2x4 16" o.c.—base att 6d nails 7" o.c. 1/16" IMPERIAL plaster—joints taped wt 7 width 4 3/4"	U of C 8-27-64 (f)		N/A	113	Excellent surface hardness and abrasion resistance	a-1337
1 hr. est	Stag Wd Stud—Gypsum Lath & Plaster—stag 2x4 16" o.c.—com top & bottom plates—2" THERMAFIBER ins wool batts—3/8" plain ROCKLATH nailed—1/2" gypsum sand plaster wt 18 width 7 3/4"	TL-58-64 (s)	50		182	Excellent party wall—note comparison with test TL-61-232	a-1366
1 hr.	Wd Stud—Resil Gypsum Lath & Plaster—2x4 16" o.c.—3/8" perf ROCKLATH—R-1 resil clips—1/2" 100:2 gypsum sand plaster wt 15 width 6 1/8"	T-1329-OSU (f) TL-60-20 (s)		47	160		a-1377
1 hr. est	Slot Wd Stud—Gypsum Lath & Plaster—2x4 slotted studs 16" o.c.—3" THERMAFIBER ins wool blkts—3/8" plain ROCKLATH—1/2" plaster wt 14 width 5 3/8"	TL-62-348 (s)	44		145		a-1377
1 hr. est	Wd Stud—Resil Metal Lath & Plaster—2x4's—3.4# dm met lath—1/4" pencil rod—#200 resil clips—3/4" gypsum sand plaster wt 21 width 5 3/8"	TL-61-86 (s)	43		177	Excellent sound isolation for this type construction	a-1356
1 hr. est	Stag Wd Stud—Gypsum Lath & Plaster—stag 2x3 16" o.c.—3/8" plain ROCKLATH nailed—100:2 1/2 gypsum sand plaster wt 14 width 4 3/4" min	TL-61-232 (s)	42		173		a-1366
1 hr.	Wd Stud—Metal Lath & Plaster—2x4 16" o.c.—3.4# dm met lath—3/4" 100:2-100:3 gypsum sand plaster wt 20 width 5 3/8"	BMS-92 (f) NBS-228 F43 (s)		41	146		a-1346
1 hr.	Wd Stud—Gypsum Lath & Plaster—2x4 16" o.c.—3/8" perf ROCKLATH nailed 4" o.c.—1/2" 100:2 gypsum sand plaster wt 15 width 5 3/8"	T-948 OSU (f) TL-58-60 (s)		41	128	Same as NBS-148 except perf. lath	a-1366
1 hr.	Wd Stud—Gypsum Lath & Plaster—2x4 16" o.c.—3/8" plain ROCKLATH—1 1/8" nails 4" o.c.—1/2" 100:2 gypsum sand plaster wt 15 width 5 3/8"	T-1380 OSU (f) NBS-148 (s)		40	128	Standard wood stud partition	a-1366
1 hr.	Wd Stud—Gypsum Lath & Plaster—2x4 16" o.c.—3/8" perf ROCKLATH nailed 3" o.c.—3/16" 100:2 gypsum perlite plaster wt 9 width 5 1/2"	UL Des 7-1 hr (f) NBS-252 (f)		N/A	128	Extra nailing and lightweight aggregate with extra thickness	a-1366
1 hr.	Wd Stud—Metal Lath & Plaster—2x4 16" o.c.—3.4# dm met lath—3/8" 100:2-100:2 gypsum sand plaster wt 18 width 5 3/8"	BMS-92 table 30 (f)	39 est		146		a-1346

DRYWALL ASSEMBLIES

METAL FRAMED TYPE

1 hr. est	Met Stud— $\frac{1}{2}$ " SHEETROCK FIRECODE "C" gypsum wallbd— $\frac{3}{8}$ " USG studs 24" o.c.—single layer wallbd one side appl vert & screw att—1" THERMAFIBER sound atten bkts one side—2 layers wallbd opp side appl vert & screw att—joints stag & fin—perimeter caulked wt 7 width $5\frac{1}{4}$ "	TL-65-252 (s)	51		156		a-1207
1 hr.	Met Stud— $\frac{1}{2}$ " SHEETROCK FIRECODE "C" gypsum wallbd—1 $\frac{1}{8}$ " USG studs 24" o.c.—2 layer—base layer $\frac{1}{2}$ " USG min fiber sound dead bd screw att—wallbd face layer strip lamin & screw att—joints stag & fin—perimeter caulked wt 7 width $3\frac{3}{8}$ "	UL Des 23-1 hr (f) USG-57-FT-G&H (s)		48	167	Min. value metal stud drywall party wall—sound test made on $3\frac{3}{8}$ " studs	a-1207
1 hr.	Met Stud— $\frac{1}{2}$ " SHEETROCK FIRECODE "C" gypsum wallbd—2 $\frac{1}{2}$ " USG studs 24" o.c.—single layer wallbd ea side appl vert & screw att— $1\frac{1}{2}$ " THERMAFIBER sound atten bkts one side—joints fin—perimeter caulked wt 5 width $4\frac{5}{8}$ "	T-3362-OSU (f) TL-65-158 (s)		47	138	Sound test based on $3\frac{3}{8}$ " studs & 1" wool thickness	a-1207

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fire rating	description	test no.	stc rating		relative cost index	comments	folder reference
			11-f	16-f			
1 hr.	Met Stud— $\frac{5}{8}$ " SHEETROCK FIRECODE gypsum wallbd— $\frac{3}{8}$ " USG studs 24" o.c.—wallbd single layer screw att 12" o.c.—joints fin—perim caulked wt 6 width $4\frac{1}{8}$ "	T-1174-OSU (f) USG-17-FT-G&H (s)	42		109	Basic 1-hr. corridor—fire test based on screws 8" o.c. at vert. joints	a-1207
1 hr.	Met Stud— $\frac{5}{8}$ " SHEETROCK FIRECODE gypsum wallbd— $\frac{1}{8}$ " USG studs 24" o.c.—wallbd single layer screw att 12" o.c.—joints fin—perimeter caulked wt 5 width $2\frac{7}{8}$ "	U of C 7-31-62 (f) TL-64-29 (s)	38		108	Min. 1-hr. drywall partn.—fire test based on screws 8" o.c. at vert. joints	a-1207
LAMINATED TYPE							
1 hr. est	368 Gypsum Ribwall— $\frac{5}{8}$ " SHEETROCK FIRECODE gypsum wallbd— $\frac{1}{8}$ "x6" gypsum ribs 24" o.c. lamin betw single layer wallbd ea side—wallbd screw att at joints—joints fin wt 8 width $3\frac{3}{4}$ "	TL-62-285 (s)	43		130		a-1067
1 hr.	278 Gypsum Studwall— $\frac{5}{8}$ " SHEETROCK FIRECODE gypsum wallbd— $\frac{1}{8}$ "x6" lamin gypsum studs 24" o.c.—wallbd screw att both sides 18" o.c. wt 7 width $2\frac{7}{8}$ "	UL Des 16-1 hr (f) N/A			113	Basic interior divider—chase allows easy elect. installation	a-1057
MOVABLE TYPE							
1 hr.	Mov Demountable Partn— $\frac{1}{2}$ " vinyl faced SHEETROCK FIRECODE "C" gypsum wallbd & battens screw att— $2\frac{1}{2}$ " USG met studs 24" o.c.—2" THERMAFIBER sound atten bkts wt 6 width $3\frac{1}{2}$ "	UL Des 21-1 hr (f) TL-63-127 (s)	49		187	Low cost—movable by owner's crew—only met. stud movable partn. with high sound & fire rating	a-1287
1 hr.	Mov E-Z WALL Drywall Partn—concealed "H" studs 24" o.c. bridged— $\frac{1}{2}$ " THERMAFIBER sound atten bkts— $\frac{3}{4}$ "x24" bevel edge FIRECODE panels mill lamin—joints unfin wt 7 width $3\frac{3}{4}$ "	U of C 12-9-65 (f) 45 est			186		a-1307
1 hr.	Mov VAUGHAN WALLS pre-chased sound wall—spec $\frac{5}{8}$ " USG gypsum wallbd face panels lamin to $\frac{5}{8}$ " gypsum core strips—2 rows $1\frac{1}{4}$ " thick separ by spec met Sound Atten Spacer (pat. pend.) placed vert at joints—2" insul wool in core space wt 7.5 width 3"	U of C 6-23-66 (f) WEAL 7-12-66 (s)	44		250	Excellent space saving features. Special sound seals	a-1297
1 hr.	Mov VAUGHAN WALLS pre-chased partn—spec $\frac{5}{8}$ " USG gypsum wallbd face panels lamin to spec 1" gypsum core strips placed to form panel joints wt 7 width $2\frac{1}{4}$ "	UL Des 22-1 hr (f) TL-64-212 (s)	36		150	Panel edges screw att. at qtr. points on fire test. Excellent corridor or tenant wall	a-1297
1 hr.	Mov VAUGHAN WALLS standard solid partn—spec $\frac{5}{8}$ " USG gypsum wallbd face panels lamin to spec 1" USG gypsum core units 24" wide wt 9 width $2\frac{1}{4}$ "	T-1235-OSU (f) U of C 5-24-65 (f) TL-64-213 (s)	36		166	Aluminum trim with steel inserts used in U of C fire test. Fine corridor, tenant wall	a-1297
WOOD FRAMED TYPE							
1 hr.	Stag Wd Stud— $\frac{5}{8}$ " SHEETROCK FIRECODE or W/R FIRECODE "C" gypsum wallbd—2 rows 2x3 stag & sep plates 1" apart—base layer of $\frac{1}{2}$ " USG wd fiber sound dead bd att with 6d ctd nails—face layer 7d ctd nails 7" o.c.—joints fin wt 9 width $8\frac{1}{2}$ "	UL Des 17-1 hr (f) USG-46-FT-G&H (s)	53		175	Good sound isolation—party wall use	a-1397
1 hr.	Wd Stud—Resil $\frac{5}{8}$ " SHEETROCK FIRECODE "C" gypsum wallbd—2x4 16" o.c.—3" THERMAFIBER ins wool bkts—RC-1 chan one side spaced 24" o.c.—wallbd att with 1" Type S screws—opp side direct att with $1\frac{1}{4}$ " Type W screws—joints fin—perimeter caulked wt 7 width $5\frac{3}{8}$ "	UL Des 27-1 hr (f) USG-33-FT-G&H (s)	52		134	Best value of wood stud drywall party walls	a-1407
1 hr. est	Stag Wd Stud— $\frac{5}{8}$ " SHEETROCK FIRECODE gypsum wallbd—2x3 16" o.c.—2x3 plates 1" apart—wallbd att $1\frac{1}{4}$ " Type W screws for 16" o.c.—2" THERMAFIBER ins wool bkts one side—perim caulked wt 8 width $7\frac{1}{2}$ "	USG-106-FT-G&H (s) USG-155-FT-G&H (s)	51 49		153	Best value in 50 stc range for this type of party wall. 155-FT based on 2x6 common plate	a-1387
1 hr. est	Slot Wd Stud— $\frac{5}{8}$ " SHEETROCK FIRECODE gypsum wallbd—2x4 slotted studs 16" o.c.—base layer of $\frac{1}{2}$ " USG wd fiber sound dead bd 2 sides att with 5d ctd nails 12" o.c.—face layer 6d ctd nails 8" o.c.—joints fin wt 8 width $5\frac{3}{8}$ "	USG-44-FT-G&H (s)	49		155	Party wall use—good value	a-1397
1 hr. est	Slot Wd Stud— $\frac{5}{8}$ " SHEETROCK FIRECODE gypsum wallbd—2x4 slotted studs 16" o.c.—single layer screw appl one side—2 layers opp side base layer screw appl & face layer lamin—joints fin—perimeter caulked wt 8.8 width $5\frac{1}{2}$ "	USG 28-FT-G&H (s)	48		143	Party wall use—good sound performance	a-1397
1 hr. est	Wd Stud— $\frac{5}{8}$ " SHEETROCK FIRECODE gypsum wallbd—2x4 16" o.c.—base layer of $\frac{1}{2}$ " USG wd fiber sound dead bd 2 sides att with ctd nails—face layer wallbd 6d ctd nails 8" o.c.—joints fin wt 8 width $5\frac{3}{8}$ "	IBI-20-FT-G&H (s) USG-43-FT-G&H (s)	50 36		151	Party wall use—IBI-20-FT based on face layer wallbd strip lamin—perimeter caulked	a-1397



fire rating	description	test no.	stc rating		relative cost index	comments	folder reference
			11-f	16-f			
1 hr.	Slot Wd Stud— $\frac{5}{8}$ " SHEETROCK FIRECODE gypsum wallbd—2x4 slotted studs 16" o.c.—3" THERMAFIBER ins wool blkts—wallbd screw att 12" o.c. or nailed 7" o.c.—joints fin—perim caulked wt 7 width 4 $\frac{1}{2}$ "	UL Des 28-1 hr (f) USG-29-FT-G&H (s)	48		135		a-1387
1 hr. est	Wd Stud—Resil SHEETROCK gypsum wallbd 2 layers one side & 1 layer opp side—2x4 16" o.c.—RC-1 chan both sides spaced horiz 24" o.c.—1 layer $\frac{5}{8}$ " wallbd screw att one side—opp side base layer of $\frac{5}{8}$ " wallbd screw att & face layer of $\frac{1}{2}$ " wallbd lamin—joints fin—perimeter caulked wt 8.7 width 6 $\frac{1}{2}$ "	TL-61-10 (s)	48		146		a-1407
1 hr.	Wd Stud—Resil $\frac{5}{8}$ " SHEETROCK FIRECODE gypsum wallbd—2x4 16" o.c.—RC-1 chan both sides spaced horiz 24" o.c. att with 6d nails—wallbd att with 1" Type S screws—joints fin—perimeter caulked wt 7 width 5 $\frac{1}{2}$ "	T-1396-OSU (f) TL-60-52 (s)	45		127	Fully resilient 1-hr. fire rated party wall	a-1407
1 hr. est	Wd stud— $\frac{5}{8}$ " SHEETROCK FIRECODE gypsum wallbd—2x4 16" o.c.—2" THERMAFIBER ins wool blkts—wallbd screw att with 1 $\frac{1}{4}$ " Type W screws 16" o.c.—joints fin—perim caulked wt 7 width 4 $\frac{1}{2}$ "	USG-105-FT-G&H (s)	35		131		a-1387
1 hr.	Wd Stud— $\frac{5}{8}$ " SHEETROCK FIRECODE or W/R FIRECODE "C" gypsum wallbd—2x4 16" o.c.—wallbd nailed 7" o.c.—1 $\frac{1}{2}$ " cem ctd nails—joints exp or fin—perim caulked wt 7 width 4 $\frac{1}{2}$ "	UL Des 5-1 hr (f) USG-30-FT-G&H (s)	34		111	Sound rating obtained with joints taped	a-1387
1 hr.	Wd Stud—2 layers $\frac{3}{8}$ " SHEETROCK gypsum wallbd lamin & nailed—2x4 16" o.c.—joints fin wt 7 width 5 $\frac{1}{2}$ "	T-118-48-48A-OSU (f)	N/A		133		a-1397

other partitions

PLASTERED ASSEMBLIES

WOOD FRAMED TYPE

N/A	Wd Stud—Resil Gypsum Lath & Plaster—2x4 16" o.c.—3" THERMAFIBER ins wool blkts— $\frac{3}{8}$ " plain ROCKLATH appl direct one side—opp side R-1 resil clips & $\frac{3}{8}$ " ROCKLATH— $\frac{1}{2}$ " 100:2 $\frac{1}{2}$ gypsum sand plaster both sides—perimeter caulked wt 14.5 width 5 $\frac{1}{4}$ "	CK-664-37 (s) USG-118-FT-G&H (s)		49		Outstanding sound attenuation through use of clips and insulating wool	a-1377
N/A	Wd Stud—Resil Gypsum Lath & Plaster—2x4 16" o.c.— $\frac{3}{8}$ " plain ROCKLATH appl direct one side—opp side base layer of $\frac{1}{2}$ " USG wd fiber sound dead bd appl direct & face layer of $\frac{3}{8}$ " ROCKLATH appl with R-5 resil clips— $\frac{1}{2}$ " 100:2 $\frac{1}{2}$ gypsum sand plaster both sides—perimeter caulked wt 14.5 width 6 $\frac{1}{4}$ "	USG-119-FT-G&H (s)	54		160	Excellent sound attenuation	a-1377
N/A	Wd Stud—Resil Gypsum Lath & Plaster—2x4 16" o.c.— $\frac{3}{8}$ " plain ROCKLATH—R-1 resil clips both sides— $\frac{1}{2}$ " 100:2 $\frac{1}{2}$ gypsum sand plaster both sides—perimeter caulked wt 14.5 width 6 $\frac{1}{4}$ "	USG-121-FT-G&H (s)	54		138	Excellent sound attenuation at moderate cost	a-1377

DRYWALL ASSEMBLIES

MOVABLE TYPE

N/A	Mov E-Z WALL Drywall Partn—concealed "H" studs 24" o.c.—2" THERMAFIBER sound atten blkts— $\frac{3}{4}$ "x24" bevel edge panels mill lamin—joints unfin wt 7 width 3 $\frac{5}{8}$ "	USG-93-FT-G&H (s)	45		180	Versatile movable partn.—variety of style combinations	a-1307
N/A	Mov Demountable Partn— $\frac{1}{2}$ " vinyl faced SHEETROCK FIRECODE gypsum wallbd & battens screw att—2 $\frac{1}{2}$ " USG met studs 24" o.c. wt 5 $\frac{1}{2}$ width 3 $\frac{1}{2}$ "	TL-63-126 (s)	42		172	Same as TL-63-127 without wool—note stc difference	a-1287

WOOD FRAMED TYPE

45 min. est	Wd Stud— $\frac{1}{2}$ " SHEETROCK gypsum wallbd—2x4 16" o.c.—base layer $\frac{1}{2}$ " USG sound dead bd att with 1 $\frac{1}{2}$ " ctd nails 12" o.c.—wallbd face layer strip lamin & 2 $\frac{1}{4}$ " ctd nails 24" o.c. into studs wt 7 width 5 $\frac{1}{2}$ "	IBI-5-FT-G&H (s)	42		162	Good where sound resistance more important than fire rating	a-1397
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ceiling and floor construction

CEILING CONSTRUCTIONS are selected, detailed and specified by the architect to perform as many as eight different functions. They are:

- | | |
|-------------------------|--------------------------|
| 1. Cover or Concealment | 5. Light Reflection |
| 2. Fire Protection | 6. Accessibility |
| 3. Sound Isolation | 7. Air Distribution |
| 4. Sound Absorption | 8. Base for Light Source |

cover or concealment—The requirement for concealment is a function of design. Ceiling constructions are available in a variety of types that allow the architect a wide freedom for selection of form, shape and texture.

fire protection—As with partitions, the requirement for fire protection is adequately defined by building codes. The selection of a floor and ceiling system meeting this requirement is easily resolved based on constructions accepted by the building code or on test data provided by manufacturers which is acceptable under the building code.

To meet the tested applied load conditions, the ceiling membrane must protect load-carrying structural members, such as open-web steel joists, as well as steel floor units, which are part of the structural assembly.

sound isolation—Sound isolation considerations are of two types:

- (1) *Airborne Sound*—The requirement for privacy, that is, isolation from airborne sound, in ceiling constructions is basically the same as the like problem in partitions. See page 6.
- (2) *Impact Sound*—The transfer of sound originating from impact on floors, through the supporting construction, ceiling suspension and ceiling membrane to the area below is particularly critical in living units. The most efficient isolation is achieved by providing a resilient covering of the floor at the point of impact. At this time, building codes or lending agencies have not established a minimum requirement for impact sound transmission.

sound absorption—The requirement for a satisfactory acoustical climate in buildings is well established. The ceiling is usually one area available for equally distributing the necessary absorbing material which, due to its relatively soft surface, must be inaccessible to abrasions or surface damage.

light reflection—Data for all standard ceiling surfaces is available in this literature series. (See USG Folders f-1927, f-1857, f-1917.)

accessibility—The requirement for easy accessibility to the plenum is desirable when services requiring frequent repair, alteration or adjustment are located in that area. Accessibility can be provided in plaster ceilings by access panels and in acoustical tile ceilings by concealed, accessible suspensions or lay-in grid construction.

air distribution—For more than ten years the AIRSON* System has been utilizing the ceiling area for the uniform distribution of cooled and heated air. The use of this system has steadily increased as architects and mechanical engineers have recognized the value of

eliminating drafts and unsightly diffusers with the accompanying dirt accumulation, and the economy of using the plenum space for air distribution (see USG Folder b-1567). Also growing in popularity are ceiling electrical radiant heat systems—provided by U.S.G. for concrete and wood construction in the THERMALUX integral drywall system (Folder b-1527) and in RED TOP* Radiant Heat Plaster and Plaster Base for cable installations (Folder b-1517).

base for light source—Modern design has dictated flush lighting with the fixture located in the plenum.

structural integrity—Ceiling constructions are non-load-bearing membranes. Generally they are subject to internal stresses, stresses due to deflection of their supporting structural members, and on occasion stresses due to restraints or movement of the vertical planes they meet. When such stresses exceed the strength of the ceiling they are relieved by cracking. If provision is made to compensate for these forces, the ceiling surface will remain unblemished. The internal stresses are the same as those existing in partitions—see page 6.

structural movement—Structural movement stressing ceilings breaks down into two general areas:

- (1) *Deflection of Structural Members* due to live load, dead load and creep deflection cause like deflections in ceilings supported therefrom. Total deflections in excess of 1/720 of the span can cause cracking in the plaster ceiling constructions.
- (2) *Restraint*—Ceiling membranes restrained from their normal expansion and contraction due to thermal or hygrometric changes by walls or penetrating columns develop stresses that are relieved by cracking in plaster ceiling constructions and by crushing or warping in acoustical tile ceilings.

Ceiling constructions vary greatly in their resistance to these forces. A mechanically suspended ACOUSTONE* mineral tile ceiling, being constructed of many separate units, will absorb considerably more stress without noticeable deformation than will a plaster ceiling which is a continuous membrane.

All ceiling construction should be isolated from walls and penetrating structural members. Stress in ceilings can be relieved through control joints as shown in applicable USG Systems Folders. Maximum ceiling areas and control joint spacing are specified for particular assemblies.

roof stresses—Section C following lists constructions available with PYROFILL* and THERMOFILL* reinforced poured gypsum decks.

All such monolithic roof slabs are subject to stresses from expansion and contraction and movement within the structure. The best recommendation to eliminate rupturing of roofing felts is through the use of rigid roof insulation which controls thermal expansion and contraction in the slab itself and acts as a shearing plane between the roof deck and the roofing membrane. If it is not economically feasible to use a rigid roof insulation, a minimum 43# coated felt should be nailed dry to the gypsum deck as the first course of built-up roofing.

fire rating	description	test no.	stc rating		relative cost index	comments	folder reference
			11-f	16-f			

ceiling air distributing and heating systems

VARIOUS ASSEMBLIES

3 hrs. (beam 5 hrs.)	AIRSON AURATONE FIRECODE Air Distr Syst on Exposed Grid— $\frac{3}{4}$ "x24"x48" acoust panels 50% AIRSON A-5 or 100% AIRSON A-2—clg interrupted—light fixt prot by $\frac{1}{4}$ " THERMAFIBER min wool bd— $2\frac{1}{2}$ " conc deck on cellular stl flr clg wt 1.2	UL Des 65-3 hr (f)	41 est		clg matls 102	Includes air controls in panels; "cost index" excludes zone barriers & plenum insul.	b-1567	1
3 hrs. (beam 4 hrs.)	AIRSON AURATONE FIRECODE Air Distr Syst on Concealed Z-Splines— $\frac{3}{4}$ "x12"x12" acoust tile 100% AIRSON A-2 or 50% AIRSON A-5—clg interrupted—light fixt prot by $\frac{1}{4}$ " THERMAFIBER min wool bd— $2\frac{1}{2}$ " conc deck on cellular stl flr clg wt 1.2	UL Des 59-3 hr (f)	40 to 44		clg matls 142	Includes air controls in tile—"cost index" excludes zone barriers & plenum insul.	b-1567	2
2 hrs.	AIRSON AURATONE FIRECODE Air Distr Syst on Exposed Grid— $\frac{3}{4}$ "x24"x48" acoust panels 50% AIRSON A-5 or 100% AIRSON A-2—clg interrupted—light fixt prot by $\frac{1}{4}$ " THERMAFIBER min wool bd— $1\frac{1}{2}$ " PYROFILL gypsum conc roof deck with $\frac{1}{2}$ " SHEETROCK formbd over bar joist clg wt 1.2	UL RC-6-2 hr (f)	41 est		clg matls 102	Includes air controls in panels; "cost index" excludes zone barriers & plenum insul.	b-1567	3
2 hrs.	AIRSON AURATONE FIRECODE Air Distr Syst on Exposed Grid— $\frac{3}{4}$ "x24"x48" or 24"x24" acoust panels 50% AIRSON A-5 or 100% AIRSON A-2—clg interrupted—light fixt prot by $\frac{1}{4}$ " THERMAFIBER min wool bd— $2\frac{1}{2}$ " conc deck on riblath over bar joist clg wt. 1.2	UL Des 72-2 hr (f)	N/A		clg matls 102	Includes air controls in panels; "cost index" excludes zone barriers & plenum insul.	b-1567	4
2 hrs. (beam 2 hrs.)	AIRSON ACOUSTONE 120 Air Distr Syst on USG Concealed Z-Spline Susp Syst— $\frac{3}{4}$ "x12"x12" min acoust tile 50% AIRSON A-5 or 100% AIRSON A-2—clg interrupted—light fixt prot by $\frac{1}{4}$ " THERMAFIBER min wool bd— $2\frac{1}{2}$ " conc deck on cellular stl flr clg wt 1.3	UL Des 85-2 hr (f)	39 est		clg matls 142	Includes air controls in tile; "cost index" excludes zone barriers & plenum insul.	b-1567	5
2 hrs.	AIRSON AURATONE FIRECODE Air Distr Syst on Concealed Z-Splines— $\frac{3}{4}$ "x12"x12" acoust tile 100% AIRSON A-2 or 50% AIRSON A-5—clg interrupted—light fixt prot by $\frac{1}{4}$ " THERMAFIBER min wool bd— $2\frac{1}{2}$ " conc deck on riblath over bar joist clg wt 1.2	UL Des 84-2 hr (f)	40 to 44		clg matls 135	Includes air controls in tile—"cost index" excludes zone barriers & plenum insul.	b-1567	6
2 hrs.	AIRSON AURATONE FIRECODE Air Distr Syst on Concealed Z-Splines— $\frac{3}{4}$ "x12"x12" acoust tile 100% AIRSON A-2 or 50% AIRSON A-5—clg interrupted—light fixt prot by $\frac{1}{4}$ " THERMAFIBER min wool bd—2" THERMOFILL gypsum conc roof deck with $\frac{1}{2}$ " SHEETROCK formbd over bar joist clg wt 1.2	UL Des RC-13-2 hr(f)	40 to 44		clg matls 135	Includes air controls in tile—"cost index" excludes zone barriers & plenum insul.	b-1567	7
incomb. class A	AIRSON AURATONE Air Distr Syst on Exposed Grid— $\frac{3}{4}$ "x24"x24" or 24"x48" acoust panels slotted AIRSON A-5 or A-2 on a 100%, 50% or 25% basis clg wt 1.2	authority ASTM E84-61T	N/A		clg matls 102	Air controls in panels; "cost index" excludes zone barriers & plenum insul.	b-1567 f-1927	8
incomb. class A	AIRSON ACOUSTONE "F" Air Distr Syst on USG Concealed Z-Spline Susp Syst— $\frac{3}{4}$ "x12"x12" or 12"x24" min acoust tile—slotted AIRSON A-2 or A-5 clg wt. 1.3	authority ASTM E84-61T	36 est based on 50% A-5		clg matls 112	Basic concealed system; "cost index" excludes zone barriers & plenum insul.	b-1567 f-1927	9
incomb.	AIRSON Grid Air Distr Syst—Exposed AIRFLO grid systems for standard acoust panels—adjustable air distr through grid itself		N/A		clg matls 102 excl plenum treatmt	Basic exposed grid system with unslotted panels—steel or aluminum grid	b-1567 f-1927	10
1 hr. est	THERMALUX elect radiant heated ceiling—2" nom wd sub & fin flr—2x10 wd joist 16" o.c.— $\frac{1}{2}$ " THERMALUX htg panels & filler panels (both Type C core) att with spec insul nails 6" o.c.— $\frac{1}{4}$ " THERMALUX fin panels lamin over base panels—joints fin clg wt 3		N/A		clg matls 38 (excl htg syst costs)	Est. fire rating based on constr. in UL Des 42—1 hr. Completely integrated USG system. Uniform heat, lower operating temps., exceptional comfort	b-1527	11
1 hr.	RED TOP Radiant Heat Plaster—1" nom wd sub-fin flr on wd joist—spec $\frac{1}{2}$ " Type X plaster base att direct—5d nails 6" o.c.—fiber tape stapled over joints—elect heat cables embedded in $\frac{1}{4}$ " radiant heat plaster clg wt 5	FPRI 39 (f)	N/A		clg matls 32	Better heat emission, allows higher cable temps. than with other plasters	b-1517	12

4-hour rated ceilings

PLASTERED ASSEMBLIES

4 hrs. (beam 4 hrs.)	Metal Lath & Plaster— $\frac{3}{4}$ " cr chan susp $7\frac{1}{4}$ " below deck 2" below beam—3.4# dm met lath & $\frac{1}{2}$ " 100:3 gypsum perlite plaster basecoat— $\frac{1}{2}$ " USG acoust plaster—conc over cellular stl flr clg wt 7	GA-NBS-338 (f)	N/A		clg matls 140		b-1487	13
4 hrs. (beam 4 hrs.)	Metal Lath & Plaster— $\frac{3}{4}$ " chan 13" o.c. $3\frac{1}{2}$ " below beam—3.4# dm met lath & $\frac{1}{2}$ " STRUCTO-LITE (Type S) plaster—2" conc over fluted stl flr clg wt 6	UL Des 12-4 hr (f)	N/A		clg matls 129		b-1487	14
4 hrs.	ROCKLATH PI Base & Plaster— $\frac{3}{4}$ " cr chan 12" o.c. & BRACE-TITE Clips— $\frac{3}{8}$ " perf gypsum lath—1" 100:2-100:3 gypsum perlite plaster—1" 20-ga hex mesh—2" conc on riblath over bar joist clg wt 7	GA-NBS-311 (f)	N/A		clg matls 120		b-1466	15

fire rating	description	test no.	stc rating		relative cost index	comments	folder reference
			11-f	16-f			

3-hour rated ceilings

VARIOUS ASSEMBLIES

16	3 hrs.	ACOUSTONE 180 Fissured or MOTIF'D ¾"x12"x12" min acoust tile on Concealed Z-Spline Syst—2½" conc deck on riblath over bar joist clg wt 1.3	UL Des 96-3 hr (f)	39 est		clg matls 112	b-1557
17	3 hrs. (beam 5 hrs.)	AURATONE FIRECODE ¾"x24"x48" acoust clg panels in Susp Exp Grid Syst—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—2½" conc on cellular stl flr clg wt 1.2	UL Des 65-3 hr (f)	40 to 44		clg matls 72	See Sound Control Products Folder for STC values of various patterns b-1547
18	3 hrs. (beam 4 hrs.)	AURATONE FIRECODE ¾"x12"x12" acoust clg tile on Concealed Z-Spline Syst—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—2½" conc deck on cellular stl flr clg wt 1.2	UL Des 59-3 hr (f)	40 to 44		clg matls 112	See Sound Control Products Folder for STC values of various patterns b-1547
19	3 hrs. (beam 3 hrs.)	¾" SHEETROCK FIRECODE "C" gypsum wallbd—USG met fur chan 24" o.c.—wallbd att with 1" Type S screws 12" o.c.—joints exp or fin—3" conc on riblath over bar joist clg wt 3	UL Des 82-3 hr (f)	N/A		clg matls 40	b-1497
20	3 hrs.	ROCKLATH PI Base & Plaster—¾" cr chan 12" o.c. & BRACE-TITE Clips—¾" perf gypsum lath—14-ga diag wire reinf—¾" 100:2½" gypsum perlite plaster—2½" conc over cellular stl flr clg wt 5	GA-NBS-337 (f)	N/A		clg matls 115	Good crack resistance with an opportunity to reinforce plaster at re-entry angle b-1466
21	3 hrs. (beam 4 hrs.)	Metal Lath & Plaster—¾" cr chan susp 15½" below deck & 3½" below beam—3.4# dm mesh metal lath—¾" STRUCTO-LITE (Type R) plaster—2" conc over cellular stl flr clg wt 5	UL Des 11-3 hr (f)	N/A		clg matls 127	b-1487
22	3 hrs.	Metal Lath & Plaster—¾" cr chan furred or susd—3.4# dm met lath & ¾" neat wood fiber gypsum plaster—2½" conc on riblath over bar joist clg wt 9	BMS-92 table 43 (f)	N/A		clg matls 130	Cost index based on furred construction b-1487

2-hour rated ceilings

MINERAL FIBER SURFACES

23	2 hrs. (beam 2 hrs.)	ACOUSTONE 120 Fissured or Glacier or MOTIF'D ¾"x12"x12" min acoust tile on Concealed Z-Spline Syst—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—2½" conc deck on cellular stl flr clg wt 1.3	UL Des 85-2 hr (f)	39 est		clg matls 112	b-1557
24	2 hrs.	ACOUSTONE 120 Fissured or Glacier or MOTIF'D ¾"x12"x12" min acoust tile on Concealed Z-Spline Syst—2½" conc deck on riblath over bar joist clg wt 1.3	UL Des 41-2 hr (f)	39 est		clg matls 112	b-1557
25	2 hrs.	AURATONE FIRECODE ¾"x24"x48" acoust clg panels in Susp Exposed Grid Syst—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—1½" PYROFILL gypsum conc roof deck with ½" SHEETROCK formbd over bar joist clg wt 1.2	UL Des RC-6-2 hr(f)	40 to 44		clg matls 72	See Sound Control Products Folder for STC values of various patterns b-1547
26	2 hrs.	AURATONE FIRECODE ¾"x24"x48" or 24"x24" acoust clg panels in Susp Exposed Grid Syst—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—2½" conc deck on riblath over bar joist clg wt 1.2	UL Des 72-2 hr (f)	40 to 44		clg matls 72	See Sound Control Products Folder for STC values of various patterns b-1547
27	2 hrs.	AURATONE FIRECODE ¾"x12"x12" acoust clg tile on Concealed Z-Spline Syst—clg interrupted—light fixt prot by 1¼" min wool bd—2½" conc on riblath over bar joist clg wt 1.2	UL Des 84-2 hr (f)	40 to 44		clg matls 105	See Sound Control Products Folder for STC values of various patterns b-1547
28	2 hrs.	AURATONE FIRECODE ¾"x12"x12" acoust clg tile on Concealed Z-Spline Syst—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—2" THERMOFILL gypsum conc roof deck with ½" SHEETROCK formbd over bar joist clg wt 1.2	UL Des RC-13-2 hr(f)	40 to 44		clg matls 105	See Sound Control Products Folder for STC values of various patterns b-1547

PLASTERED ASSEMBLIES

29	2 hrs.	Metal Lath & Plaster—3.4# dm met lath & ¾" 100:2-100:3 gypsum sand plaster—susp 3" min clearance below flr plates—2" conc deck on stl plate flr clg wt 9	BSM-92 table 44 (f) USG-10-FT-G&H (s)	45		clg matls 126	b-1487
30	2 hrs.	ROCKLATH PI Base & Plaster—¾" cr chan 12" o.c. & BRACE-TITE Clips—¾" perf gypsum lath—14-ga diag wire reinf—¾" 100:2-100:3 gypsum sand plaster—2" conc over bar joist clg wt 7	GA-NBS-345 (f)	N/A		clg matls 106	Good crack resistance with an opportunity to reinforce plaster at re-entry angle b-1466
31	2 hrs.	½" IMPERIAL gypsum pl base Type X & thin coat plaster ceiling—USG met fur chan 24" o.c.—pl base att with screws 12" o.c.—joints taped—½" IMPERIAL plaster clg wt 4	UL Des 221-2 hr (f)	N/A		clg matls 55	Spacing of furring channel at 16" o.c. recommended a-1147



fire rating	description	test no.	stc rating		relative cost index	comments	folder reference
			11-f	16-f			
GYPSUM DRYWALL SURFACES							
2 hrs.	½" SHEETROCK FIRECODE "C" gypsum wallbd—furred or susp—USG met fur chan 24" o.c.—wallbd att with 1" Type S screws 12" o.c.—joints exp or fin—2½" conc on riblath over bar joist clg wt 3	UL Des 221-2 hr (f)	N/A		clg matls 40		b-1497
2 hrs.	¾" SHEETROCK FIRECODE gypsum wallbd—furred or susp—USG met fur chan 24" o.c.—wallbd att with 1" Type S screws 12" o.c.—joints exp or fin—2½" conc deck on riblath over bar joist clg wt 3	UL Des 82-2 hr (f)	40 db est		clg matls 44	Sound estimate based on joints finished	b-1497
2 hrs.	¾" SHEETROCK FIRECODE gypsum wallbd—furred or susp—USG met fur chan 12" o.c.—wallbd att with type S screws 8" o.c.—joints fin—2½" conc deck on riblath over bar joist clg wt 3	UL Des 63-2 hr (f)	40 db est		clg matls 45		b-1497

1½-hour rated ceilings

VARIOUS ASSEMBLIES

1½ hrs. (beam 3 hrs.)	ACOUSTONE 90 Fissured or Glacier or MOTIF'D ¾"x12" x12" min acoust tile on Concealed Z-Spline Syst—2" conc deck on riblath over bar joist clg wt 1.3	UL Des 6-1½ hr (f)	47 est		clg matls 105		b-1557
1½ hrs. (beam 3 hrs.)	AURATONE FIRECODE ½"x24"x48" acoust clg panels in Susp Exposed Grid Syst—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—2" conc deck on riblath over bar joist clg wt 1.2	UL Des 18-1½ hr (f)	40 to 44		clg matls 65	See Sound Control Products Folder for STC values of various patterns	b-1547
1½ hrs.	Resil 2 layers ½" SHEETROCK FIRECODE "C" gypsum wallbd ceiling—1" nom wd sub & fin flr—2x10 wd joist 16" o.c.—RC-1 chan spaced 24" o.c. screw att over base layer wallbd—face layer screw att to chan 12" o.c.—joints fin clg wt 5	UL Des 22-1½ hr (f)	49 est		clg matls 46		b-1457
1½ hrs.	¾" SHEETROCK FIRECODE gypsum wallbd—furred or susp—USG met fur chan 24" o.c.—wallbd screw att 12" o.c.—joints fin—2" conc on riblath over bar joist clg wt 3	UL Des 4-1½ hr (f)	42 db est		clg matls 46	Sound attenuation estimate made for floor & ceiling system	b-1497
1½ hrs.	Resil 2 layers ½" IMPERIAL gypsum pl base Type X & thin coat plaster ceiling—wd joist 2x10 16" o.c.—1" nom wd sub & fin flr—RC-1 chan spaced 24" o.c. screw att over base layer pl base—face layer screw att to chan 12" o.c.—1¼" IMPERIAL plaster—joints taped clg wt 9	UL Des 22-1½ hr (f)		49 est (INR) —10 est	clg matls 63		a-1337
1½ hrs.	Metal Lath & Plaster—¾" cr chan furred or susp—3.4# dm met lath & ¾" 100:2-100:3 gypsum sand plaster—2" conc on riblath over bar joist clg wt 9	BMS-92-table 43 (f)	N/A		clg matls 119	Cost index based on furred construction	b-1487
1½ hrs.	Metal Lath & Plaster—susp 3.4# dm met lath & 1" 100:2 gypsum sand plaster—rib type stl rf deck with 1½" wd fiber insul clg wt 13	NBS-58 (f)	N/A		clg matls 129		b-1487
1½ hrs.	Metal Lath & Plaster—susp 3.4# dm met lath & ¾" 100:2-100:3 gypsum sand plaster—rib type stl rf deck with 1" wd fiber insul clg wt 10	NBS-57 (f)	N/A		clg matls 127		b-1487

1-hour rated ceilings

MINERAL FIBER SURFACES

1 hr.	ACOUSTONE 90 Fissured or Glacier or MOTIF'D ¾"x12" x12" min acoust tile on Concealed Z-Spline Syst—2" nom wd sub & fin floor over wd joist 16" o.c. clg wt 1.3	UL Des 15-1 hr (f)	47 est		clg matls 112		b-1557
1 hr.	AURATONE FIRECODE ¾"x24"x48" or 24"x24" acoust clg panels in Susp Exposed Grid Syst—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—2" nom wd sub & fin flr over 2x10 wd joist clg wt 1.2	UL Des 31-1 hr (f)	40 to 44		clg matls 72	See Sound Control Products Folder for STC values of various patterns	b-1547

GYPSUM DRYWALL SURFACES

1 hr.	¾" BAXBORD FIRECODE gypsum wallbd—24 ga nailing chan—wallbd att with ann nails 6" o.c.—joints unfin—2" conc on riblath fur over bar joist clg wt 3	UL Des 5-1 hr (f)	35 db est		clg matls 45		b-1497
1 hr.	Resil ¾" SHEETROCK FIRECODE gypsum wallbd ceiling—1" nom sub & fin flr—2x10 wd joist 16" o.c.—RC-1 chan spaced 24" o.c.—wallbd att with 1" & 1½" Type S screws—joints fin clg wt 3	UL Des 25-1 hr (f) NBS-717 (s)	45		clg matls 36	Sound test based on 2x8 16" o.c.	b-1457
1 hr.	Resil ½" SHEETROCK FIRECODE "C" gypsum wallbd ceiling—1¼" nom wd sub & fin flr—2x10 wd joist 16" o.c.—RC-1 chan spaced 24" o.c.—wallbd att with 1" Type S screws—joints fin clg wt 3	UL Des 41-1 hr (f)	N/A		clg matls 33		b-1457

fire rating	description	test no.	stc rating		relative cost index	comments	folder reference
			11-f	16-f			
48	1 hr. est USG Sound Code flr/clg assembly—Resil ½" SHEETROCK gypsum wallbd screw att to RC-1 chan spaced 24" o.c.—joints fin—2x10 wd joist 16" o.c.—3" THERMAFIBER ins wool blkts betw joists—1 layer ea of ½" plywd—½" USG wd fiber sound dead bd—½" FIRECODE gypsum sheathg—¾" A.C. plywd—resil flr tile clg wt 5	CK-6512-22 (s)	51	(INR) +2	clg matls 45		b-1457
49	1 hr. est Resil SHEETROCK gypsum wallbd ceiling—1¼" nom wd sub & fin flr—2x10 wd joist 16" o.c.—3" THERMAFIBER ins wool blkts betw joists—RC-1 chan screw att to joists—wallbd att with 1" Type S screws—joints fin clg wt 3	CK-6512-9 (s) (½" FIRECODE "C") CK-6412-3 (s) (¾" reg SHEETROCK)	50 49	(INR) -5 -5	clg matls 45 46		b-1457
50	1 hr. est Resil SHEETROCK gypsum wallbd ceiling—1¼" nom wd sub & fin flr—44-oz carpet & 40-oz pad atop flr—2x10 wd joist 16" o.c.—3" THERMAFIBER ins wool blkts betw joists—RC-1 chan screw att to joists—wallbd att with 1" Type S screws—joints fin clg wt 3	CK-6512-8 (s) (½" FIRECODE "C") CK-6412-4 (s) (¾" reg SHEETROCK)	50 50	(INR) +20 +19	clg matls 45 46		b-1457
51	1 hr. est Resil SHEETROCK gypsum wallbd ceiling—1¼" nom wd sub & fin flr—2x10 wd joist 16" o.c.—RC-1 chan screw att to joist—wallbd att with 1" Type S screws—joints fin clg wt 3	CK-6512-6 (s) (½" FIRECODE "C") CK-6412-10 (s) (¾" reg SHEETROCK)	47 47	(INR) -12 -12	clg matls 33 34		b-1457
52	1 hr. est Resil SHEETROCK gypsum wallbd ceiling—1¼" nom wd sub & fin flr—44-oz carpet & 40-oz pad atop flr—2x10 wd joist 16" o.c.—RC-1 chan screw att to joists—wallbd att with 1" Type S screws—joints fin clg wt 3	CK-6512-7 (s) (½" FIRECODE "C") CK-6412-9 (s) (¾" reg SHEETROCK)	46 47	(INR) +16 +15	clg matls 33 34		b-1457
53	1 hr. ½" SHEETROCK FIRECODE "C" gypsum wallbd ceiling—1" nom wd sub & fin flr—2x10 wd joist 16" o.c.—wallbd att with 5d cem ctd nails 6" o.c.—joints fin clg wt 3	UL Des 42-1 hr (f)	N/A		clg matls 23		a-1387
54	1 hr. ¾" SHEETROCK FIRECODE gypsum wallbd ceiling—Amer Plywood Assn 2-4-1 flr 4x10 wd joist 48" o.c.—USG met fur chan spaced 24" o.c.—wallbd att with 1" Type S screws—joints fin clg wt 3	UL Des 28-1 hr (f)	N/A		clg matls 36	Only 1-hr. residential drywall system based on 48" joist spacing	a-1387
55	1 hr. ¾" SHEETROCK FIRECODE gypsum wallbd ceiling—1" nom wd sub & fin flr—2x10 wd joist 16" o.c.—wallbd att with 6d nails 6" o.c.—joints fin clg wt 3	UL Des 1-1 hr (f) CK-6412-7 (s) CK-6412-8 (s)	37 38	(INR) -19 +5	clg matls 26	In CK-6412-8 test, 44-oz. carpet & 40-oz. pad added atop flooring	a-1387
56	1 hr. est ¾" SHEETROCK gypsum wallbd ceiling—1¼" nom wd sub & fin flr—2x10 wd joist 16" o.c.—3" THERMAFIBER ins wool blkts betw joists—wallbd att with 6d nails 6" o.c.—joints fin clg wt 3	CK-6412-6 (s) CK-6412-5 (s)	40 39	(INR) -18 +7	clg matls 35	In CK-6412-5 test, 44-oz. carpet & 40-oz. pad added atop flooring	a-1387

PLASTERED ASSEMBLIES

57	1 hr. ROCKLATH Pl Base & Plaster—¾" cr chan 16" o.c. & BRACE-TITE Clips—¾" perf gypsum lath—¾" STRUCTO-LITE plaster—2½" conc on riblath over bar joist clg wt 5	NBS 261 (f)	45 db est		clg matls 104	Attenuation test—good crack resistance, can reinforce plaster at re-entry angle	b-1466
58	1 hr. Gypsum Lath & Plaster Ceiling—wd joist—1" nom wd sub & fin flr—¾" perf ROCKLATH—3" Striplath on joints—½" 100:2 gypsum sand plaster clg wt 6	BMS-92 table 42 (f) NBS-714 (s)	37		clg matls 51	Good method to attain 1-hr. rating—note Striplath use	a-1366
59	1 hr. Gypsum Lath & Plaster Ceiling—wd joist—1" nom wd sub & fin flr—¾" ROCKLATH FIRECODE—3" Striplath along joist—½" 100:2 gypsum sand plaster clg wt 6	FPRI No. 6 (f)	37 est		clg matls 40	Best method to attain 1-hr. rating—standard frame const	a-1366
60	1 hr. Gypsum Lath & Plaster Ceiling—wd joist—1" nom wd sub & fin flr—¾" ROCKLATH FIRECODE—¾" 100:2 gypsum perlite or STRUCTO-LITE plaster clg wt 5	T-2134-1 OSU (f)	N/A		clg matls 40	Constr. same as FPRI No. 6 except for Striplath & plast.	a-1366
61	1 hr. Gypsum Lath & Plaster Ceiling—wd joist—1" nom wd sub & fin flr—¾" perf ROCKLATH—½" 100:2½ gypsum perlite plaster clg wt 7	GA-NBS-258 (f)	N/A		clg matls 39	Standard frame construction	a-1366
62	1 hr. ½" IMPERIAL gypsum pl base Type X & thin coat plaster ceiling—wd joist 2x10 16" o.c. fire stopped—1" nom wd sub & fin flr—pl base att 5d nails 6" o.c.—¼" IMPERIAL plaster—joints taped clg wt 7.5	UL Des 42-1 hr (f)	N/A		clg matls 27		a-1337
63	1 hr. Resil ½" IMPERIAL gypsum pl base Type X & thin coat plaster ceiling—wd joist 2x10 16" o.c.—1" nom sub & fin flr—RC-1 chan spaced 16" o.c. and at end joints—pl base att with Type S screws 12" o.c.—¼" IMPERIAL plaster—joints taped clg wt 7	UL Des 41-1 hr (f)	N/A		clg matls 38		a-1337
64	1 hr. est Wd Joist—Resil Metal Lath & Plaster Ceiling—1" nom wd sub & fin flr—3.4# dm met lath att to ¼" pencil rod on #200 resil clips—¾" 100:2-100:3 gypsum sand plaster clg wt 10	NBS-710 (s)	52		clg matls 68	Excellent sound isolation & crack resistance	a-1356
65	1 hr. Wd Joist—Metal Lath & Plaster Ceiling—1" nom wd sub & fin flr—3.4# dm met lath att with 1½" nails 6" o.c.—¾" 100:2-100:3 gypsum sand plaster clg wt 10	BMS-92 table 42 (f)	35 db est		clg matls 55		a-1346



construction selector ceilings

b

fire rating	description	test no.	stc rating		relative cost index	comments	folder reference
			11-f	16-f			

other ceiling assemblies

VARIOUS ASSEMBLIES

incomb. class A	ACOUSTONE "F" ¾"x12"x24" or 12"x24" min acoust tile on Concealed Z-Spline Syst	authority ASTM E84-61T	29 est		clg matls 83	Basic concealed spline acoustical tile system; several patterns available	b-1557 f-1927	66
incomb. class A	ACOUSTONE "F" ¾"x12"x24", 12"x36", or 12"x48" min acoust tile on Exp Z-Spline Syst	authority ASTM E84-61T	26 est		clg matls 83	Basic exposed spline acoustical tile system for accessibility	b-1557 f-1927	67
incomb. class A	AURATONE ½"x24"x24" or 24"x48" acoust clg panels in Susp Exposed Grid Syst clg wt 1.0	authority ASTM E84-61T	40 to 44		clg matls 53	Basic incombustible lay-in acoustical panels; NRC varies with pattern	b-1547 f-1927	68
incomb. class A	AURATONE ¾"x24"x24" or 24"x48" acoust clg panels in Susp Exposed Grid Syst clg wt 1.0	authority ASTM E84-61T	40 to 44		clg matls 60	Basic incombustible lay-in acoustical panels; NRC varies with pattern	b-1547 f-1927	69
N/A	ROCKLATH Pl Base & Plaster—¾" cr chan & BRACE-TITE Clips—¾" gypsum lath—½" 100:2-100-2½ gypsum sand plaster clg wt 6	USG-6-FT-G&H (s)	45 db		clg matls 103	Attenuation test—suspension & ceiling membrane only	b-1466	70
N/A	Resil Gypsum Lath & Plaster Ceiling—wd joist—1" nom sub & fin flr—¾" ROCKLATH appl with R-1 resil clips—½" gypsum sand plaster clg wt 6	NBS-709 (s)	52		clg matls 58	Good resistance to air-borne sound; excellent crack resistance	a-1377	71
N/A	¾" SHEETROCK FIRECODE gypsum wallbd—1½" cr chan 4" o.c.—USG met fur chan 24" o.c.—wallbd screw att 12" o.c.—joints fin clg wt 3	USG-5-FT-G&H (s)	45 db (9-f avg)		clg matls 60	"Up and over" attenuation test—suspension & clg. membrane only	b-1497	72
45 min.	½" SHEETROCK FIRECODE gypsum wallbd ceiling—1" nom wd sub & fin flr—2x10 wd joist 16" o.c.—wallbd att with 5d cem ctd nails 6" o.c.—joints fin clg wt 3	UL Des 1-45 min (f) NBS-716 (s)	36		clg matls 23	Basic 45-min assembly—sound attenuation test	a-1387	73
description		comments					folder reference	
QUIETONE Grid System		Wood fiber and incombustible mineral fiber lay-in acoustical panels with simplified exposed metal grid; STC 39, NCR .55-.65; also plain decorative panels					b-1506	74
SHEETROCK gypsum wallbd 2-layer direct appl—wd joist		Superior to 1-layer appl. in appearance, strength, fire and sound resistance; includes applications for electric cable radiant heating systems					a-1397	75
Exposed formboard ceilings under gypsum conc poured roof deck		Choice of finished formboards, incombustible and acoustical types, available as part of integral roof system. See "Roof Assemblies" section of Selector					c-1647	76



construction selector roof assemblies

c

(see *Roof Stresses, recommendations, page 14*)

fire rating	description	test no.	relative cost index	comments	folder reference
2 hrs.	PYROFILL Gypsum Concrete Roof Deck poured 2½" min. thickn over ½" SHEETROCK formbd—178 BT-1214 reinf mesh slab wt 12.8 thickn 3"	NBS-406 (f)	52	Thickn. includes formboard—prot. of primary steel required	c-1647
2 hrs.	THERMOFILL Gypsum Concrete Roof Deck poured 2" min thickn over 1" Fissured FIRECODE formbd—Keydeck trussed tee—Keydeck reinf mesh slab wt 8 thickn 3"	UL RC-15 (f)	60	Thickn. includes formboard—prot. of primary steel required	c-1647
2 hrs.	PYROFILL Gypsum Concrete Roof Deck poured 1½" min thickn over ½" SHEETROCK formbd—bulb or clip tee on bar joist—susp (1) AURATONE FIRECODE or (2) AIRSON acoust clg panels slab wt 8.5 thickn 2"	UL RC-6 (f)	100 (1) 120 (2) incl clg assembly	Thickn. includes formboard excluding ceiling—air control valves in AIRSON panels	c-1647
2 hrs.	THERMOFILL Gypsum Concrete Roof Deck poured 2" min thickn over ½" SHEETROCK formbd—bulb tee on bar joist—susp (1) AURATONE FIRECODE or (2) AIRSON acoust clg tile slab wt 8.2 thickn 2½"	UL RC-13 (f)	105 (1) 140 (2) incl clg assembly	Thickn. includes formboard excluding ceiling—air control valves in AIRSON tile	c-1647
1 hr.	PYROFILL Gypsum Concrete Roof Deck poured 2" min thickn over ½" SHEETROCK formbd—178 BT-1214 reinf mesh slab wt 10.7 thickn 2½"	GA-NBS-400 (f)	50	Thickn. includes formboard—prot. of primary support steel required	c-1647
incomb.	PYROFILL or THERMOFILL Gypsum Concrete poured over incomb formbd—rated incombustible by NBFU definition	SS-S-00118C fed spec	—	Thickness of fill may be 1½" or 2" min.	c-1647
description		comments			folder reference
USG Metal Edge Gypsum Plank Deck		Dry constr. over steel purlins—lightweight, quickly erected, end bearing not required—pitched or flat deck			c-1657



fireproofing of structural framing

d

fire rating	description	test no.	relative cost index	folder reference
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column fireproofing

4-HOUR RATED APPLICATIONS

1	4 hrs.	Gypsum Lath & Plaster Fireprfg—2 layers ½" ROCKLATH pl base—1" 20-ga hex mesh—1½" 100:2½ gypsum perlite plaster	GA-NBS-278 (f)	125	d-1716
2	4 hrs.	Metal Lath & Plaster Fireprfg—3.4# dm met lath fur ½" from face of col—1¾" STRUCTO-LITE plaster with fill betw flange face & lath	UL Des 3-4 hr (f)	120	d-1706
3	4 hrs.	Metal Lath & Plaster Fireprfg—3.4# dm met lath—¾" cr chan spaced 24" o.c. vert—1½" 100:2-100:3 gypsum perlite plaster	UL Des 7-4 hr (f)	109	d-1706
4	4 hrs.	Metal Lath & Plaster Fireprfg—3.4# sf dm met lath wrapped around col—1¾" STRUCTO-LITE or 100:2-100:3 gypsum perlite plaster	UL Des 6-4 hr (f)	108	d-1706
5	4 hrs.	PYROBAR Gypsum Tile & Drywall Fireprfg—2" solid tile around col—tile banded 24" from ea end—contin met angles screw att to bands—1 layer ¾" SHEETROCK FIRECODE wallbd screw att to angles—met corner beads—joints fin wt 13	UL Des 31-4 hr (f) UL Des 34-4 hr (f) (based on 3" hol tile)	165 163	d-1737
6	4 hrs.	PYROBAR Gypsum Tile & Plaster Fireprfg—3" hollow—¾" gypsum sand plaster—sanded basecoat & lime putty fin recom wt 17	BMS-92 table 40 (f)	172	d-1727
7	4 hrs.	PYROBAR Gypsum Tile & Plaster Fireprfg—2" solid—¾" 100:3 gypsum sand plaster wt 17	BMS-92 table 40 (f)	174	d-1727
8	4 hrs.	PYROBAR Gypsum Tile & Plaster Fireprfg—2" solid—2" met band placed 24" from ea end—22-ga contin met angles screw att to bands—¾" IMPERIAL pl base screw att to angles—1¼" IMPERIAL plaster wt 14	UL Des 31-4 hr (f) UL Des 34-4 hr (f) (based on 3" hol tile)	172 170	d-1727

3-HOUR RATED APPLICATIONS

9	3 hrs.	Gypsum Lath & Plaster Fireprfg—¾" perf ROCKLATH pl base—1¾" 100:2½ gypsum perlite plaster	GA-NBS-321 (f)	100	d-1716
10	3 hrs.	Gypsum Lath & Plaster Fireprfg—¾" perf ROCKLATH pl base—2" 100:2-100:3 gypsum sand plaster	GA-NBS-344 (f)	106	d-1716
11	3 hrs.	Metal Lath & Plaster Fireprfg—3.4# sf dm met lath wrapped around col—1¾" 100:2-100:3 gypsum perlite plaster	UL Des 6-3 hr (f)	97	d-1706
12	3 hrs.	Gypsum Drywall Fireprfg—3 layers ¾" SHEETROCK FIRECODE wallbd around col—base & second layers att by DUR-A-BEAD & horiz double tie wires—2nd & 3rd layers lamin & screw att to beads—joints fin	UL Des 14-3 hr (f)	69	d-1737

2-HOUR RATED APPLICATIONS

13	2 hrs.	Gypsum Lath & Plaster Fireprfg—¾" perf ROCKLATH pl base—1¾" 100:2-100:3 gypsum sand plaster	GA-NBS-351 (f)	100	d-1716
14	2 hrs.	Metal Lath & Plaster Fireprfg—3.4# sf met lath wrapped around col—1" 100:2-100:2 gypsum perlite plaster	UL Des 2-2 hr (f)	85	d-1706
15	2 hrs.	Gypsum Drywall Fireprfg—½" SHEETROCK FIRECODE "C" wallbd around col—double layer over ea flange end—double layer on flange faces separ by USG #158 met studs & screw att—met beads on corners—joints fin	UL Des 10-2 hr (f)	37	d-1737
16	2 hrs.	PYROBAR Gypsum Tile Fireprfg—3" hollow—unplastered wt 11	BMS-92 table 40 (f)	112	d-1727
17	2 hrs.	PYROBAR Gypsum Tile Fireprfg—2" solid—unplastered wt 11	BMS-92 table 40 (f)	114	d-1727

1-HOUR RATED APPLICATIONS

18	1 hr.	Gypsum Lath & Plaster Fireprfg—¾" perf ROCKLATH pl base—½" 100:2½ gypsum sand plaster	GA-NBS-273 (f)	76	d-1716
19	1 hr.	Metal Lath & Plaster Fireprfg—3.4# dm met lath wrapped around col—¾" 100:2-100:3 gypsum sand plaster	BMS-92 table 40 (f)	80	d-1706

beam fireproofing

20	4 hrs.	Metal Lath & Plaster Caged Beam Fireprfg—3.4# sf dm met lath enclosing beam—1½" 100:2 gypsum perlite plaster UL 40 U18.16	UL Des 8-4 hr (Beam 4 hrs) (f)	99	b-1487
21	3 hrs.	Metal Lath & Plaster Caged Beam Fireprfg—9 ga galv wire wrapped around beam 18" o.c. bent over bottom flange—3.4# sf dm met lath—1" mill formulated gypsum plaster UL 40 U18.3 (Type S)	UL Des 10-2 hr (Beam 3 hrs) (f)	84	b-1487

(See Ceiling Systems Folders Nos. b-1487, b-1497, b-1547, b-1557 and b-1567 for protection of beams, girders, and trusses by suspended ceiling constructions)

fireproofing recommendations

1. Because of its natural fire-protective qualities, gypsum is an ideal fireproofing material—either as plaster or wallboard. Lightweight aggregates, when mixed with gypsum plasters, increase the fire resistance due to their insulative properties. However, the addition of lightweight aggregate, particularly vermiculite, reduces the compressive strength of gypsum plasters, making the basecoat incompatible with the hard, brittle, white putty coat. Where columns and beams are to be white coated and decorated with paint, a sanded basecoat plaster or a mill-mixed perlited basecoat plaster should be used.

2. Where possible, isolate column fireproofing from the column itself. Movement in the structure should not be transmitted to the finished membranes of ceilings or partitions.

3. If the fireproofing cannot be isolated from the structural elements, then a relief or control joint should be provided at the plane of contact between fireproofing and walls and ceilings. See USG partition and ceiling folders in this series for control joint details.



construction selector exterior walls & furring



description	relative cost index	comments	folder reference
Wood furring strips 16" o.c., Insulating ROCKLATH* plaster base, 1/2" sanded basecoat plaster, lime putty finish	138	Direct attachment by means of wood furring strips does not isolate the surface membrane from structural stresses	a-1366
Wood furring strips 16" o.c., 1/2" Insulating SHEETROCK*, PERF-A-TAPE* Joint Treatment	100	Does not isolate the surface membrane from structural stresses; good vapor barrier	a-1387
USG Metal Furring Channels, 24" o.c., 1/2" Insulating SHEETROCK screw attached, PERF-A-TAPE Joint Treatment	82	Direct attachment by means of furring strips does not isolate the surface membrane from structural stresses. No limiting height	e-1777
RC-1 Furring Channels 24" o.c., 1/2" Insulating SHEETROCK screw attached, PERF-A-TAPE Joint Treatment	101	The resiliency of the RC-1 furring channel will reduce the transfer of structural stresses to the surface membrane	a-1407
R-5 Resilient Clips 16" o.c., Insulating ROCKLATH and BRIDJOINT* Clips, 1/2" sanded basecoat plaster, lime putty finish	141	Resiliency of the R-5 Clip will reduce the transfer of structural stresses to surface membrane	a-1156
3/4" C.R. Channels 16" o.c., cross braced, 3.4# diamond mesh metal lath, 3/8" sanded basecoat plaster, lime putty finish coat	203	No vapor barrier; isolation adequate	a-1027
3/4" C.R. Channels 16" o.c., cross braced, 3/8" Insulating ROCKLATH and BRACE-TITE* Clips, 1/2" sanded basecoat plaster, lime putty finish	185	Isolation adequate; good vapor barrier	a-1036
3/8" Long Length Insulating ROCKLATH, supported by 3/4" horizontal channels 36" o.c., 3/4" sanded basecoat plaster, lime putty finish	203	Limited to 12' ceiling height. Control joints should be used 20' o.c.	a-1036
USG Metal Furring Channels 16" o.c., 1/2" Insulating IMPERIAL plaster base screw attached, 1/16" IMPERIAL thin coat plaster finish	115	May be attached direct or additionally furred out on 3/4" horiz. C. R. channels; good vapor barrier	a-1147
USG Metal Furring Channels 24" o.c., 3/8" Insulating ROCKLATH screw attached, 1/2" sanded basecoat plaster, lime putty finish	140	Does not isolate surface from structural stresses. No limiting height	a-1197
TRUSSTEEL* Studs 16" o.c. cross braced 4' o.c. on back chord, 3/8" Insulating ROCKLATH attached with TL-1 Clips, 1/2" sanded basecoat plaster, lime putty finish	185	Free standing; allows for pipe chase clearance; good vapor barrier	a-1187
TRUSSTEEL Studs 16" o.c. cross braced 4' o.c. on back chord, 3.4# diamond mesh metal lath, 3/8" sanded basecoat plaster, lime putty finish coat	203	Free standing; allows for pipe chase clearance; no vapor barrier	a-1177
3 3/4" USG Metal Studs 24" o.c., 1/2" Insulating SHEETROCK, PERF-A-TAPE Joint Treatment	155	Free standing; allows for pipe chase clearance; 9' limiting height; good vapor barrier	a-1207
3 3/4" USG Metal Studs 16" o.c., 3/8" Insul. ROCKLATH screw attached, 1/2" basecoat plaster, lime putty finish	175	Free standing furring; allows for pipe chase clearance; 9' limiting height; good vapor barrier	a-1197
Either 1 1/2" (1) STYROFOAM FR, (2) DORVON FR 100, (3) THURANE NB, bonded to masonry wall, 1/2" SHEETROCK bonded to rigid foam, PERF-A-TAPE Joint Treatment	(1) 167 (2) 164 (3) 173	Excellent insulation and moisture barrier characteristics. No pipe chase capacity.	e-1786
ARMORWEAVE Expanded Metal Fascia Walls	—	Attractive mesh pattern, in carbon steel or aluminum, attached to grid for sunshading or screening exterior walls; also ideal for balcony railings	e-1816
ORIENTAL* Exterior Stucco on USG Stuccomesh	—	Applied over portland cement-lime basecoat direct to sheathing	e-1796
USG Epoxy Coatings System	—	Ceramic-like finish for interior walls subject to abuse	f-1917



title	folder reference
Gypsum Plasters	f-1857
Basecoat, finish coat, gauging, ornamental, acoustical, and special plasters; finishing limes; general plastering specs.	
Plaster Bases & Accessories	f-1867
Gypsum and metal lath; gypsum partition tile; corner and casing beads, screeds, metal trim, control joints, clips, runners, metal base, metal studs, furring channels, brackets, partition terminals; general lathing specs.	
Gypsum Wallboard & Accessories	f-1877
Wallboards, coreboard, studs and ribs, backing boards; corner beads, metal trim, moldings, channel, runners, brackets, metal base, control joint; screws, nails, adhesives; erection specs for board and accessories.	
Drywall Joint Treatment Products	f-1887
Reinforcing tape, joint compounds, laminating adhesives; application specs.	
Sheathing Products	f-1897
Gypsum sheathing; wood fiber insulating sheathing; attachment specs.	

title	folder reference
Insulating Wool Products	f-1907
Insulating and sound attenuation blankets; perimeter insulation; blowing and pouring wool; Installed Resistance ratings; application specs.	
Paint Products	f-1917
Interior flats, enamels; exterior and floor paints; masonry coatings; stains, varnishes; texture finishes; sealers, primers, undercoat, block filler; epoxy and metal coatings; industrial finishes; preparation and application specs.	
Sound Control Products	f-1927
Mineral tile and panels; air distr. system components; acoust. space units; wood fiber tile; gypsum and asbestos ceiling board; metal accessories; material and installation specs.	
Asphalt Roofing Products	f-1937
235-lb. to 300-lb. strip and specialty shingles; self-sealing shingles; descrip- tions of 22 built-up roofing assemblies (West only); UL label classifications; inspection and installation specs.	
Limes for Masonry Mortars	f-1946
Air entraining and mason's lime; hydrated lime; mason's quicklime; propor- tioning and workmanship specs.	

trade name index—product catalogs

(Listed products may also be found in other pertinent folders in U.S.G. Architectural Technical Literature series—see page 2)

product	folder reference
ACOUSTONE mineral acoustical tile	f-1927
AIRSON air distribution systems	f-1927
AIRFLO, AIRSON LOK ceiling grids	f-1927
ARMORWEAVE expanded metal fascia	e-1816
AUDICOTE acoustical plaster	f-1857
AUDITONE fiber acoustical tile	f-1927
AURATONE mineral acoustical panels, tile	f-1927
BAXBORD gypsum backing board	f-1877
BRACE-TITE lathing system	f-1867
BRIDJOINT lathing clips	f-1867
CABLE STRUT metal tray systems	AV-99
CASCADE asphalt roofing shingles	f-1937
COVER COAT finishing compound	f-1887
DIAMOND finish plaster	f-1857
DIAMOND paint products	f-1917
DUR-A-BEAD corner reinforcement	f-1887
DURABOND joint treatment	f-1887
DWA-10, DWA-14 drywall adhesives	f-1877
EXPAND-X expanded metal	AV-94, AV-95
E-Z-S ceiling suspension system	f-1927
E-Z-WALL movable partitions	a-1307
FIRECODE plaster base	f-1867
FIRECODE gypsum board	f-1877
FIRECODE gypsum sheathing	f-1897
FIRECODE ceiling panels, tile	f-1927
FORTIFIED-300 asphalt roofing shingles	f-1937
GLOBE-STRUT channel framing	AV-98
GRAND PRIZE paint products	f-1917
GRATE-X expanded metal grating	AV-96
GRIP STRUT metal grating	AV-97
HI-LITE acoustical plaster	f-1857
IMPERIAL plastering products	f-1857, f-1867
IMPERIAL paint products	f-1917
IVORY plastering lime	f-1857
MORTASEAL mason's lime	f-1946
MOTIF'D ACOUSTONE mineral acoustical tile	f-1927
ORIENTAL plaster and stucco	f-1857
PERF-A-BEAD corner reinforcement	f-1877
PERF-A-TAPE joint treatment	f-1887
PERFATONE metal pan acoustical units	f-1927

product	folder reference
PERF-A-TRIM metal trim	f-1877
PYROBAR gypsum partition tile	f-1867
PYROFILL gypsum concrete roof deck	c-1647
QUIETONE ceiling grid, tile, panels	b-1506
RED TOP mason's lime	f-1946
RED TOP finishing lime, plastering products	f-1857, f-1867
ROCKLATH gypsum plaster base	f-1867
SEALCO asphalt roofing shingles	f-1937
SHEETROCK gypsum wallboard, metal accessories	f-1877
SHEETROCK gypsum roof formboard	c-1647
SHEETROCK sealer, spray compound	f-1917
STRUCTO-BASE, STRUCTO-GAUGE, STRUCTO-LITE plasters	f-1857
TEXOLITE paint products	f-1917
THERMAFIBER insulating wool	f-1907
THERMAFIBER light fixture protection	f-1927
THERMALUX ceiling heat system	b-1527
THERMOFILL gypsum concrete roof deck	c-1647
TRUS-LOK lathing clips	f-1867
TRUSSTEEL metal studs	f-1867
ULTRAWALL pre-finished gypsum wallboard	f-1877
USG metal lath, plastering accessories	f-1867
USG gypsum coreboard, metal studs, accessories	f-1877
USG joint compound, adhesive	f-1887
USG insulating sheathing, wood fiber boards	f-1897
USG perimeter insulation	f-1907
USG paint products	f-1917
USG ceiling board, metal accessories	f-1927
USG asphalt roofing	f-1937
USG fiber roof formboard	c-1647
USG gypsum roof plank	c-1657
USG expanded metal products	AV-94, AV-95
VAUGHAN WALLS† movable partitions	a-1297
VICRTEX, VICRWALL† vinyl-faced wallboard	f-1877

†Reg. U.S. Pat. Off. by Vaughan Interior Walls, Inc.

†Reg. U.S. Pat. Off. by L. E. Carpenter & Co.

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U. S. G. products—specification standards

The listings below contain existing Standard Specifications, classified as Federal, Army, Navy, Treasury, etc., which apply to U.S.G. materials. Where ASTM, local codes, etc., require product variance, consult your U.S.G. representative. The symbol "WC" after a product listing denotes that U.S.G. is on the government list of those companies willing to certify that their products meet that specification. See pertinent USG Product Catalog for additional information.

PRODUCT	FEDERAL SPECIFICATION	ASTM DESIGNATION
PLASTER		
RED TOP* gypsum plaster (WC)	SS-P-402 type N	C28—gypsum neat plaster
RED TOP wood fiber plaster (WC)	SS-P-402 type W	C28—gypsum wood fiber
RED TOP STRUCTO-LITE* plaster	non-applicable	C28—gypsum ready mix plaster
Perlite aggregate	non-applicable	C35
RED TOP gauging plaster (WC)	SS-P-402 type G	C28—gypsum gauging for finish coat
RED TOP molding plaster	SS-P-402 type G	C28—gypsum gauging for finish coat
RED TOP keenes cement regular (WC) quick trowel	SS-P-00410 type I SS-P-00410 type II	C61 C61
STRUCTO-GAUGE* plaster	SS-P-402 type G	C28—gypsum gauging for finish coat
STRUCTO-BASE* plaster	SS-P-402 type N with added req. of dry compressive strength not less than 2800 PSI.	C28—gypsum neat plaster
HI-LITE* acoustical plaster-stippled	SS-A-111 type I class h to p class gg to oo	
stippled-perforated	SS-A-111 type I class i to p class gg to oo	
AUDICOTE* acoustical plaster	SS-A-111 type I class i to p class hh to oo type II class i to p class hh to oo	

GYPSUM LATHING

ROCKLATH* plaster base— $\frac{3}{8}$ " & $\frac{1}{2}$ "	SS-L-30b type I, grades R and X, class I, forms (a) (b) and (c), styles 1, 2 and 5	C37
IMPERIAL* plaster base— $\frac{1}{2}$ " & $\frac{3}{8}$ "	SS-L-30b type I, grades R and X, class I, style 1	
RED TOP Radiant Heat plaster base— $\frac{1}{2}$ " & $\frac{3}{8}$ "	SS-L-30b type I, grades R and X, class I, style 1 (in type III size)	

PYROBAR* partition tile

(WC)	SS-T-316 or SS-T-00316a	C52
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SHEETROCK* gypsum wallboard

(plain) (insulating)	SS-L-30b	C36
square edge (WC)	type III grade R class 1	C36
tapered edge (WC)	type III grade R class 1	C36
bevel edge (WC)	type III grade R class 1	C36
$\frac{1}{2}$ " FIRECODE*	type III grade X class 1	C36
$\frac{1}{2}$ " & $\frac{3}{8}$ " FIRECODE "C"	type III grade X class 1	C36
predecorated ULTRAWALL*	type III grade R class 3	C36
vinyl covered	type III grade R or X cl. 3	
BAXBORD* backing board	type IV grade R or X cl. 1	C442

SHEATHING

FIRECODE* gypsum sheathing	SS-L-30b type II grade W class 2	C79
USG fiber insulating sheathing	LLL-I-535 class e	C208 class e

PRODUCT	FEDERAL SPECIFICATION	ASTM DESIGNATION
LIME		
RED TOP and GRAND PRIZE* finish lime	interim revision of SS-L-.00351a (com-nbs) type F	C6 type N
IVORY finish lime	type F (including added requirement of not more than 8% unhydrated oxides)	C206 type S
RED TOP masons hydrate	interim revision of SS-L-.00351a (om-nbs)	C207 type N
MORTASEAL* masons lime	type M (including added requirement of not more than 8% unhydrated oxides)	C207 type S
RED TOP and CHESHIRE quicklime	SS-Q-351 type C	C5
RED TOP quicklime	SS-Q-351 type M	C5

METAL LATHING

Bases, metal: (for) plaster, lath and stucco constr. (WC) 3.4# galv. diamond mesh lath, 2.5# and 3.4# c.a. ptd.; $\frac{1}{4}$ " 4-mesh z-rib lath 2.75# and 3.4#; $\frac{3}{8}$ " rib lath 3.4# and 4.0#	QQ-L-101a type F (flat dia. mesh) type SF (self furring dia. mesh) type FR ($\frac{1}{4}$ " flat rib) type F $\frac{3}{8}$ R ($\frac{3}{8}$ " rib)	non-applicable
hanger wire—tie wire	QQ-W-461 f finish 5 class 1 (1006 type steel)	

MINERAL FIBER INSULATION

THERMAFIBER* open face batt (membrane facing one side) blanket batt (with enveloping membranes) blowing or pouring wool	HH-1-521C type I class B HH-1-521C type I class C HH-1-521C type III HH-1-1030 HH-1-521C type I class A	none none none none
sound attenuation blanket		
USG perimeter insulation	HH-1-542 type II HH-1-562 type I cl. 2 HH-1-563 type II cl. D HH-1-564 class A & B form 1 & 2	C378 non-load bearing C392 class 1

ACOUSTICAL UNITS—PREFABRICATED

ACOUSTONE* "F" MOTIFD* ACOUSTONE AIRSON* ACOUSTONE AURATONE*	SS-S-00118 (GSA-FSS) type III class 25	E-84-61T
PERFATONE*	SS-S-00118 (GSA-FSS) type V class 25	E-84-61T
AUDITONE*	SS-S-00118 (GSA-FSS) type I class 200 & 75	

METAL GRATING

GRATE-X* grating 3.0-3.14-4.0-4.27#	MIL-G-18015s MIL-M & 17194C	non-applicable
GRIP STRUT* safety grating	RR-G-661b type III MIL-G-18015s type I, III and IV except weight requirements	non-applicable

PRODUCT	FEDERAL SPECIFICATION	ASTM DESIGNATION	OTHER NATIONAL
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GYPSUM ROOF DECKS

PYROFILL gypsum fiber concrete	(C.E. 219)	C317 material	ASA std.
SHEETROCK formboards	SS-L-30b type v	C318 material	—
USG insulation formboards	LLL-I-535	C208 class A	
USG min. fiber formboards	SS-A-118b class A	—	—
USG $\frac{1}{4}$ " asbestos formboard sheets, flat	SS-B-755 type u only	—	—
USG 2" metal edge gypsum plank—precast	SS-S-439 type 1	C-377 type 2	—

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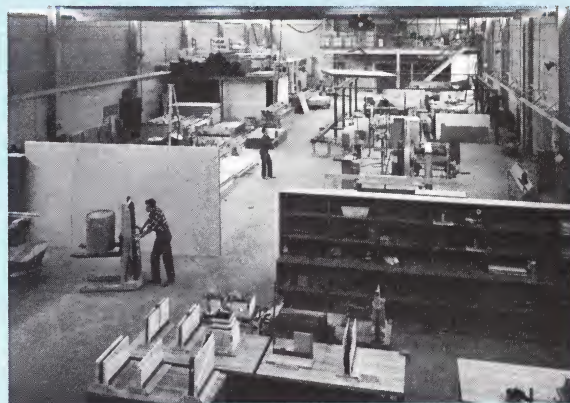
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